Technological gap in banana production technology

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ABSTRACT
The present investigation was carried out in Raver and Yaval tahsils of Jalgaon district (M.S.) to assess the level of knowledge and adoption level of banana growers as well as to study the technological gap in adoption of banana production technology. The results of study revealed that a large majority of banana growers had high level of knowledge and had also high level of adoption of recommended banana production technology. The overall technology gap was only 25.33 per cent. The variables viz., education, social participation, extension contact, knowledge level and adoption level were negatively and significantly related at 1 per cent level of probability. It means that higher the education, more social participation and extension contact, more level knowledge and adoption, lower was the technological gap in the recommended practices of banana production technology

Key words : Knowledge, Adoption, Technological Gap, Knowledge index, Adoption index and Technological gap index

INTRODUCTION

Banana (*Musa paradisica*) is one of the oldest fruit of the world. It's antiquity can be traced back to gardens of paradise, whereas eve was said to have used its leaves to cover her modesty. It can be one of the reason why the banana is called as 'Apple of Paradise'. It is a rich source of energy in the form of sugar and starch.

In India during the year 2003 area and production of banana was 4,82,800 ha and 161.67 lakh metric tonnes, respectively. In Maharashtra area and production was 72,200 ha and 43.31 lakh metric tonnes, respectively. In Jalgaon district, about 49,000 ha area was under banana and production was 32.30 lakh metric tonnes. Average productivity of banana in India was 34.30 t/ha, Maharashtra 60.00 t/ha while in Jalgaon it was 65.00 t/ha (Anonymous, 2003).

The new technology developed by Agricultural Universities and Research Institute, it has been observed that either the same has not reached to the farmers field or the farmers are reluctant to use this technology. However, the gap between the know how already attained and their application in common farmer's field is quite big. This has been proved beyond doubt, though the yield of research station and demonstration plot. The technological gap is a major problem of increasing agricultural production in the country. It was, therefore, thought necessary to carryout the present investigation with following specific objectives.

1. To study the level of knowledge and adoption level of banana growers.
2. To study the average technological gap in adoption of banana production technology.
3. To study the relation between personal and social economic characteristics of banana growers with their knowledge, adoption and technological gap in banana production.

MATERIALS AND METHODS

The present research study was conducted in Raver and Yawal tahsils of Jalgaon district of Maharashtra state during 2002-03 which was selected purposively for the purpose of study as large area under banana cultivation. Five villages from each tahsil thus total ten villages were selected by using random number table. List of banana growers were prepared from the selected villages. From these lists, 20.00 per cent banana growers were selected randomly by using n^{th} number method. Thus a sample of 120 respondents was drawn. The data were collected from 120 respondents with the help of personal interview schedule specially structured for the purpose. The data were presented in form of frequency and percentage.

Measurement of variables
1. Knowledge level

For the measurement of knowledge 49 questions of recommended practices were asked to the respondents. The respondents were given one score for each correct answer and zero score for incorrect answer. Thus, the maximum possible score was 49. The total knowledge index (K.I.) of each respondents was computed by using the following formula.

$$K.I. = \frac{\text{Score obtained}}{\text{Maximum possible score}} \times 100$$

The respondents were then grouped into three categories on the basis of their knowledge indices as given below.

Sr. No.	Level of knowledge	Knowledge Index (K.I.)
1.	Low	Upto 50
2.	Medium	51 to 70
3.	High	71 and above

2. Adoption level

Score viz., one to partial adoption, two to full adoption were allotted. There were total 45 questions included in an interview schedule about adoption of recommended practices including sub-practices. Thus. the maximum possible score an individual respondent could obtain was 90.

The adoption index of each respondents were computed by using the following formula.

$$\text{Adoption Index (A.I.)} = \frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

The respondents were grouped into three categories on the basis of their adoption indices as given below.

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Sr. No.	Level of adoption	Adoption index (A.I.)
1.	Low	Upto 50
2.	Medium	51 to 70
3.	High	71 and above

3. Levels of technological gap

The major practicewise Technological Gap Index (T.G.I.) of all practices were computed by considering sub practices under 14 major practices and by using the following formula.

$$\text{Technological gap index (T.G.I.)} = \frac{\Sigma \text{ score of recommended practices} - \Sigma \text{ Score of adoption practices}}{\Sigma \text{ score of recommended practices}} \times 100$$

Then the major practicewise average technological gaps were worked out. Similarly overall Technological Gap Index in banana production considering all recommended practices for individual banana growers were worked out. Then the banana growers were grouped into three categories on the basis of their overall Technological Gap Indices (T.G.I.) as given below.

Sr. No.	Level of technological gap	Technological gap index
1.	Low	Upto 30
2.	Medium	31 to 50
3.	High	51 and above

RESULTS AND DISCUSSION

From Table-1 it is noticed that a large majority i.e. 90 per cent of banana growers had high level of knowledge while, only 10.00 per cent of them showed medium level of knowledge about banana production technology. The similar finding were reported by the Patil (1995).

Table 1 : Distribution of banana growers according to their level of knowledge

Sr. No.	Level of knowledge	Number (N = 120)	Per cent
1.	Low	-	-
2.	Medium	12	10.00
3.	High	108	90.00
	Total	120	100.00

The data depicted in Table-2 revealed that 88.83 per cent of banana growers had high level of adoption and only 11.67 per cent of them had medium level of adoption of recommended banana production technology. This finding are in line with the finding of Patil (1995).

Table 2 : Distribution of banana growers according to their level of adoption

Sr. No.	Level of adoption	Number (N = 120)	Per cent
1.	Low	-	-
2.	Medium	14	11.67
3.	High	106	88.83
	Total	120	100.00

It is evident from Table-3 that technology gap is very wide in disease management and fertilizer application whereas technology gap is wide in case of pest management, seed treatment followed by application of organic manure (FYM), variety and selection of planting materials. This might be due to complexity of the technology, skill orientedness and needs much comprehending capabilities. There was not technological gap in the recommended practices viz., crop rotation, selection of soil, preparatory tillage operations, time of planting, method of planting and pre-harvest technology which were common practices among the banana growers.

Table 3 : Average technological gap in banana production

Sr. No.	Name of practice	Average technological gap (%)
1.	Crop rotation	00.00
2.	Selection of soil	00.00
3.	Preparatory tillage operations	00.00
4.	Application of organic manure (FYM)	37.91
5.	Variety	37.91
6.	Time of planting	00.00
7.	Selection of planting material	32.49
8.	Seed treatment	45.97
9.	Planting distance	02.91
10.	Method of planting	00.00
11.	Fertilizer application	74.16
12.	Water management	08.08
13.	Inter culturing	19.87
14.	Disease management	88.33
15.	Pest management	50.00
16.	Pre harvest technology	00.00

The data from Table-4 shows that 88.33 per cent of the banana growers had low level of technological gap while, remaining only 11.67 per cent of them had medium level of technological gap.

Table 4 : Distribution of banana growers according to their overall level of technological gap

Sr. No.	Level of technological gap	Number (N = 120)	Per cent
1.	Low	106	88.33
2.	Medium	14	11.67
3.	High	-	-
	Total	120	100.00

The data presented in Table-5 indicated that 93.84, 74.70 and 25.33 were the average indices of knowledge, adoption and technological gap respectively of banana growers.

Table 5 : Average index of knowledge, adoption and technological gap of banana growers

Sr. No.	Particular	Average index
1.	Knowledge index	93.84
2.	Adoption index	74.70
3.	Technological gap	25.33

From Table-6 it can be seen that the independent variables viz., education and extension contact were found positively and significantly related with knowledge at 1 per cent level of probability which leads to the conclusion that higher the education and more

Table 6 : Relation between personal and socio-economic characteristics of banana growers with their knowledge level, adoption and technological gap in banana production

Sr. No.	Variables	Knowledge	Adoption	Technological gap
1.	Age (years)	-0.1122	0.0441	-0.0459
2.	Education	0.286**	0.3137**	-0.3101**
3.	Experience in banana cultivation	-0.0679	0.0200	-0.0224
4.	Land holding	-0.2241*	0.1040	-0.1034
5.	Area under banana crop	-0.0176	0.1642	-0.1643
6.	Annual income	-0.0424	0.1677	-0.1675
7.	Social participation	-0.1570	0.3288**	-0.3276**
8.	Risk preference	-0.0422	-0.0686	0.0665
9.	Scientific orientation	0.0404	-0.0600	0.0592
10.	Cosmopoliteness	0.2427*	0.224*	-0.2219*
11.	Extension contact	0.2661**	0.3058**	-0.3037**
12.	Knowledge level	-	0.3043**	-0.3046**
13.	Adoption level	-	-	-0.9998**

*, ** Significant at 5 and 1 per cent level, respectively   D.f. = 118

extension contact, more would be the knowledge about banana production technology. Further the variables like age, experience in banana cultivation, area under banana, annual income, social participation and risk orientation were not significantly related with the knowledge of banana growers.

In case of adoption, the variables like education, social participation, extension contact and knowledge level were found positively and significantly related with adoption at 1 per cent level of probability. This gave rise to the interpretation that these variables were influencing the adoption pattern of the banana production technology.

The data further revealed that the independent variables like education, social participation, extension contact, knowledge level and adoption level were negatively and significantly related at 1 per cent level of probability. It leads to conclusion that higher the education, more social participation and extension contact, more the level of knowledge and adoption, lower was the technological gap in the recommended banana production technology. These findings are similar with findings of Bhati (2002).

CONCLUSIONS

It can be concluded that the overall knowledge and adoption of banana production technology is 93.84 per cent and 74.70 per cent, respectively. The adoption of practices like crop rotation, selection of soil, preparatory tillage operations, time of planting and method planting were satisfactory. Overall technology gap is 25.33 per cent. Technology gap was very wide in case of disease management, fertilizer application, pest management and seed treatment. Efforts should be made to bridge the technology gap of practices which were partially adopted and not yet adopted. Extension activities should be geared upto educate the farmers regarding these practices particularly disease management, fertilizer application, pest management and seed treatment.

ACKNOWLEDGEMENTS

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