

Challenges in Pineapple Cultivation: A Case Study of Pineapple Orchards in Tripura

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ABSTRACT

Pineapple is an important fruit crop in Tripura. Pineapple production in Tripura has been ups and downs in the past decades due to several reasons. Therefore, in the present study an attempt has been made to look into the problems encountered by the pineapple growers. The study is set in four (4) districts of Tripura, with 300 sample surveyed by multi stage sampling technique. The data thus obtained is analysed by Likert scale and rank method. The findings point that there are as many as 7 major heads of problems, out which no adequate labourer, especially for harvesting is the main challenge faced by the growers.

KEYWORDS: Pineapple, Cultivation, Challenges

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INTRODUCTION

'Ananas Comosus' is the botanical name of the fruit, Pineapple. The word 'Ananas' in a local term from fruit's origination means pine and 'Comosus' means tufted. The English term 'Pineapple' has been used since about seventeenth century. The Spanish term of Pineapple was 'Pina' (little Pine) due to its similarity in appearance to pine-cone. The English then, derived and called it Pine-apple, as the word 'apple' is a common term for any kind of round fruits back then. The name pineapple was first recorded in 1398 A D (Levith, 2014; Srinivasan, 2011). Pineapple is preferred next to mango because of its pleasant taste and flavour, in the past it is considered as a symbol of wealth and thus used as put-on-show on the dining table by the well-to-do. It is a unique fruit, in terms of size, appearance, distinct flavour and fragrance. it is also called as a Golden Queen fruit. In the family Bromeliaceous plant, a monocot flowering plant, pineapple is the most commercially important plant (Prakash et al., 2012; Iwuchukwu et al., 2017).

In crop cultivation there are several problems encountered by farmers, the problem may be related to production system and also related to marketing of

the produce. Some of the notable and persistent agriculture problems faced by farmers are, low access to technology, lack of credit, erratic supply of water, farmer's illiteracy, drought, flood etc. (Upadhyay, 2021) and some of the common problem in agriculture marketing are lack of unity among farmers, defective weights and scales, lack of organised marketing system, lack of transport facilities, lack of standardization, lack of store houses, lack of awareness of the market, distress sale, lack of market intelligence, lack of organization etc. (Nidhi et al., 2016). However, problem in agriculture production and marketing of produce may be specific and different depending upon the type of crop produce and also depending upon the place where it is produced and marketed. In horticulture crop production, especially in fruits and vegetable crops, a common problem faced by the growers is quick perishability of harvested produce.

The state of Tripura with its capital Agartala is one of the smallest states in the country, situated in the Northeastern Region of India. Pineapple production is the highest fruit production among all fruits in

Tripura in 2021-22 (DE&S, 2021-22). Pineapple of Tripura has long been accepted nationally as of high quality and superior taste. There are mainly two varieties commercially cultivated in the state, they are Kew variety (also known as King Variety or Smooth Cayenne) and Queen variety. The Queen Pineapple is the state fruit of Tripura, it is characterized by its distinct aroma and pleasant qualities with lesser fibre content. The cultivation is practised traditionally mainly by the tribals residing in the undulating plains and hilly regions of the state. Pineapple cultivation in Tripura is mostly free from application of chemical fertilizer because of great suitability of soil and climatic condition, besides, there is also an attempt by the farmers to grow organic pineapple in Tripura. Farmers in Tripura grow the pineapple under the natural shade canopy of various sparse-leave trees such as jackfruit, litchi, and other trees. It is traditionally believed that pineapple plants grown under the shade of jackfruits trees yield better quality of fruits, and it also reduces the problem of sunburned fruit (Das et al., 2021).

Methodology

Primary data collection with the help of pre-tested questionnaire was conducted in different selected RD blocks. Personal interview with the growers has also been conducted in the course of the survey. Multi Stage Sampling Technique with purposive in nature has been adopted. Purposive Sampling in selection of districts, blocks, villages, and random sampling adopted in selection of growers. To determine sample size, Yamane Sampling Technique has been used, the Yamane (1967) formula is commonly used to determine the sample size in social science research. The formula of Yamane Sampling Technique is given below.

$$n = \frac{N}{1+N(e)^2}$$

Where,

n = Sample Size

N = Population

e = level of Precision.

Putting value of N in the above formula we have,

$$n = \frac{6438}{1+6438(0.07)^2} = 197$$

Note that 6438 is approximate number of pineapple growers in Tripura.

Thus, a minimum number of 197 or more pineapple growers can be used as a sample size to represent pineapple growers in Tripura. However, for the purpose of the study 300 sample size has been considered to give wide representation and for better results. 4 (four) districts are considered to be the

highest pineapple production. the 4 (four) districts considered are two districts (Dhalai and Unokoti) under Kew pineapple producing belt and another two districts (Gomati and Sipahijala) under Queen pineapple producing belt, and finally under each selected districts 1 (one) RD Block has been taken, making it to 4 (four) RD Blocks in total, viz. Manu RD Block, Kumarghat RD Block, Mohonbhog RD Block, and Amarpur RD Block.

Analysis has been done with Likert Scale, it is a type of rating scale invented by American social psychologist Rensis Likert, It is generally used to measure respondent experience or opinions and its degree. In this technique the respondents are asked to rate their experience or opinion base on the score or response alternatives option presented to them (Likert, 1932). In the present study a Likert Scale with a six (6) point scale is used, the scale are, viz. 5: Very high, 4: High, 3: Medium, 2: Low, 1: Very low and 0: No problem. On the basis of the above Likert Scale, the growers assigned a score under each type of problem variables, and subsequently, all the type of variables are ranked accordingly for quick understanding of the different problems in order.

Analysis & Interpretation

Description of the problems generally encountered by farmers in pineapple cultivation are as follows:

Non-availability of suckers: Sucker is a planting material of pineapple plant. It is obtained from a full-grown pineapple plant of an established orchard. Unlike several others crop, pineapple cannot be grown from a seed. Therefore, a new potential grower has to buy from another established orchard. The problem could be in not receiving at the right time, at the right price or suckers from an unproductive pineapple orchard.

Non-availability of fertilizers: Generally, the growers in the region do not apply fertilizer on the plant. So, the problem here is when some section of growers wishes to apply fertilizer but could not find the chemicals or not known what fertilizer should be use. Besides, the non-availability of chemicals for growth regulator is also consider under this problem.

Inadequate irrigation: Generally, in monsoon season, nature provides enough precipitation required by pineapple plant. However, in dry season, especially in the establishing year, irrigating the orchard would ensure growth and survival of a newly planted suckers. Now, the problem is for those orchard located in hilly far-flung area and away from water sources, it is a big challenge for the farmer to irrigate the plant.

Lack of technical know-how: Pineapple farming in the region is highly labour intensive, and basic tools and equipment are used, the growers are by-and-large not known to systematic or advanced way of cultivating, harvesting, and preserving the fruit. No machine is used for cultivating and harvesting the fruit even by the larger farm. There are also some sections of new growers who are not known to even basic method of cultivation.

Non-availability of credit in time: The need of credit for establishment, maintenance, and harvesting. There is a need for huge credit for especially weeding, earthing up and other maintenance activities. Because, the growers have to invest in establishment and weeding which will be paid off only after a year i.e., in harvesting season.

Heart rot disease: Generally, pineapple in the region is free from disease and pest except from heart rot disease. The affected pineapple fruit by this disease tends to get spoil from the core of fruit, the symptoms of the fruit is not easily shown in the beginning, but later manifest with changes in colour in leaf and when the fruit is ripe. It is caused by a soft rot bacterium.

Sunburned Fruit: Pineapple fruit often sunburns as the fruits mature in summer season due to over exposure of fruit to sun light, several orchard experienced scorching of peel of pineapple fruit because of no proper shading on the fruit.

Rodent attacked: Rodent such as mice, rats, squirrels and also including birds feed on many delicate parts of pineapple plant and fruit, such as roots, crown, stem, raw and ripening pineapple fruits. Squirrels feed on the ripe fruit, they do not consume the entire fruit but extract portion of the sweet lower half of the pineapple, in this way spoiling many pineapples for sale. The rats feed on the soft roots, stem, and other delicate parts.

Attacked by monkey: The pineapple plant, when it blooms produces a fruitlet, this fruitlet is soft and edible, which monkeys love to extract and eat, leaving the plant fruitless in the season. Beside the monkey loves to eat the soft shoot side suckers and soft bottom of the leaves.

No Adequate labour for (a) weeding: Especially larger farms, and also few smaller farms require hired labour for weeding. Majority of the growers who cannot provide family labour face shortage of labour for weeding. Labourers are reluctant to work in pineapple orchard as the plant is highly prickly, especially the queen pineapple is dangerously prickly. Moreover, the orchard in the region is densely planted with no proper path ways. **(b) Harvesting:** In harvesting as well, excessive prickles are the main problem, besides, in harvesting it requires heavy labour in searching and headload transporting to assembling point. And once, the season set in, constant harvesting is necessary, which require labourer almost all the time.

Problems in Pineapple Cultivation

Sl.	Variables		Likert Scale					Rank	
			5	4	3	2	1		0
1	Non-availability of Suckers		1.0	3.0	21.5	50.3	23.5	0.7	8
2	Non-availability of Fertilizers		0.0	1.0	2.4	10.1	34.3	52.2	10
3	Inadequate Irrigation		0.0	0.0	0.0	8.4	34.6	57.0	12
4	Lack of Technical Know-how		0.0	2.7	24.8	42.3	22.8	7.4	9
5	Non-availability of Credit in Time		0.0	12.4	36.5	37.5	13.4	0.3	6
6	Crop Damage	A Sunburn	2.0	17.9	48.0	26.4	5.7	0.0	3
		B Disease	0.0	9.4	38.3	36.2	12.4	3.7	7
		C Rodent Attacked	1.7	19.1	37.2	29.2	10.7	2.0	4
		D Attacked by Monkey	0.0	1.0	7.7	9.8	7.4	74.1	11
		E Stolen	5.7	15.1	36.6	24.8	16.4	1.3	5
7	Non-availability of Adequate Labourer	A For Weeding	6.8	44.4	37.0	5.1	4.7	2.0	2
		B For Harvesting	26.1	49.5	13.1	1.3	6.4	3.5	1

Source: Field survey data, 2022 | figures in the above table under Likert scale are in percentage term.

In the above table-5.64, there are seven types of variables with 5 sub-variables making it to 12 variables in total, and all the problems are rank according to their assigned value. Following that, the most problem faced by the growers is Non-availability of adequate labourer for harvesting which is rank-1, corresponding to this variable, 26.1 percent

out of total sample growers experienced the problem of non-availability of labourers for harvesting as very high, 49 percent experienced high, 13.1 percent experienced medium and 1.3 percent experienced low, 6.4 percent experienced very low and 3.5 percent experienced no problem at all respectively. The problem of no labourer available is the highest, the

reason behind this could be that majority of the pineapple growers especially the large farm finds it as a big challenge to find hired labourers, because labourers are reluctant to work in pineapple orchard due to presences of considerable prickles on pineapple plant. The prickles presence poses uncomfortable nature of working in the pineapple orchard making it scarce of labour supply for harvesting as well as for weeding. The second rank problem is also found to be inadequate labourer for weeding purposes. So, without a proper suit designed especially for this purpose, the labourer working in weeding and harvesting has to undergo cut and bruises. Moreover, it is also a fact that in some pockets of rural agricultural region some labourers are reluctant to work despite of their economic needs purely on the basis of leisure loving.

The next problem is sunburned fruit i.e., third rank; all the growers have experienced cases of sunburned fruit, this could be because no proper shading of the orchard has been practiced or it is expensive to shade the entire orchard. Another problem faced by the growers is rodent attacked i.e., fourth rank. Likewise, the next problem is fruit being stolen by crooked passerby and other people i.e., fifth rank. The Sixth rank problem is non-availability of credit in time, some growers usually face problem of non-availability of credit for paying wage to labourer. The seventh rank problem is heart rot disease, which is caused by over moisturization of the plant and fruit.

The eighth rank problem is non availability of suckers in the time of orchard establishment. The ninth rank problem is lack of technical know-how, this problem is related to growers' awareness in the used of advanced method of cultivating and harvesting. The tenth and eleventh rank problem correspond to the variables of non-availability of fertilizer(including growth regulator) and attacked of fruit by monkey respectively. The last rank problem is lack of irrigation, for those growers who wished to irrigate in early summer season but their orchard is located afar from water bodies.

Other important problems noticed in the course of interaction with the respondents growers are application of growth regulator results in production of smaller fruit size in the following years and lack of farmers' association or organization exclusively for pineapple especially in harvesting season to control supply of fruit and exploitation of growers by the market intermediaries.

Conclusion

The growers of pineapple in Tripura encountered several problems, among them, the most common problem encountered by the growers is no adequate labourer for harvesting the produce, especially during the peak season, this is because of considerable prickles and thorn presence in pineapple plant and fruit. Therefore, it is important that the government agency provides agriculture extension service in form of specially designed cultivating suit for the growers.

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