Identifying Constraints and Suggestions in Pineapple Production and Post-Harvest Management

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Abstract— *Pineapple (Ananas comosus) (Linn.) (Merr.), is one of the commercially important fruit-crop of the world especially in India. It is the third most important tropical fruit in the world after banana and citrus with fine flavor and high nutritive value. Pineapple is a good source of carotene (Vitamin A) and vitamin B and is fairly rich in ascorbic acid (Vitamin C) and it also contains a proteolytic enzyme bromelain, a digestive enzyme that digests food by breaking down protein. Bromelain also has anti-inflammatory, anti-clotting and anti-cancer properties. Consumption of pineapple regularly helps fight against arthritis, indigestion and worm infestation. The present study was undertaken with an aim to find out the reasons behind the low level of productivity in Imphal East district which has the highest area of pineapple in the state. The random sampling procedure was adopted to select the 120 sample from four villages selected for the present study. The constraints showed that majority of the pineapple growers in the area expressed the problems of inadequate facility of transport and communication, the improper pre- and post-harvest handling technique like absence of refrigerated vans for transportation, inappropriate packaging, lack of storage facilities etc. lead to heavy losses to the farmers.*

Keywords— Constraints, Pineapple, Production, Post-Harvest Management, Manipur.

I. INTRODUCTION

India has been bestowed with wide range of climate and physio-geographical conditions which are conducive to grow various types of fruits and vegetables. Due to its long growing seasons, there is a year-round availability of fresh fruits and vegetables in India (Bengal,2013). Horticulture is an important industry among the land based agricultural systems. Horticultural crops are characterized by high productivity, higher returns, higher potential for employment generation and exports, comparatively lower requirement of water and easy adaptability to adverse soil and waste land situations. The input-output ratio in most of the horticultural crops is much higher than that in the field crops and their role in improving the environment is an added advantage (Chadha, 1993). It is established that fresh agri-produce loss reduction is cheaper than equivalent increase in production so far as economy, energy and impact on environment is concerned. If the consumption level shoots up from the current 100 gm of fruit and 200 gm of vegetables per capita per day to at least the recommended dietary level of 140 gm and 270 gm respectively by 2010, the domestic market for fresh fruits and vegetables could be as large as Rs.50000 crores at today's price structure (Anon., 2003). Past efforts have been rewarding in terms of increased production and productivity of horticultural crops (Anonymous 2007). The commercial value of fruits and vegetables in terms of direct consumption, processing as well as trade has risen substantially in recent years. "According to ICMR, a balanced diet should have 90 grams of fruits per head per day. However, on an average Indian diet has only 46 grams of fruits" (Kaul, 1997). This is a matter of concern and calls for efforts to boost fruit production.

Manipur is a small state located in the extreme northeastern part of the Indian union. The total geographical area of the state is about 22,327 square kilometres which is 0.7 % of the total land surface of the country. The state may broadly be divided into two parts viz., the hills and the valley. Manipur enjoys various climatic conditions ranging from sub-tropical to temperate regions depending upon the elevation. The main feature of the economy of Manipur is the pre-dominance of

agriculture sector. Horticulture also provides an important segment of agriculture in the state producing a variety of fruits and vegetables.

Pineapple is one of the largely grown fruits in North Eastern States of India. Its share in the country's total pineapple production is substantial and Manipur is one of the major contributors in this regard, like any other cash crop, it has also found a place in the soils of Manipur and the state is also becoming a safe breeding ground for it. Without any exaggeration, pineapple production in the state has outdone any other fruits production. Economically, the fruit has also become the backbone of a sizeable section of farmers who have been cultivating it as their major source of income. Pineapple is found in most parts of the country. However, pineapple from Manipur is high in demand in other states as it has a very distinctive taste and flavor as compared to other states" varieties. In north-east India, Manipur is one of the leading pineapples producing States (Meitei, 1997) owing to its salubrious climate and soil type.

There are vast areas of foothills in Manipur (more than 2,00,000 ha) which are quite suitable for cultivation of pineapple and if properly utilized, it can be brought under cultivation through which Manipur can be a leading pineapple producing state of the country, thereby improving the economic condition of the farmers of Manipur. Though production is high, yet the farmers are not able to save their produce from the Post Harvest Losses resulting in great economic losses. Prevention of Post Harvest Losses in the block will lead to better returns and eventually lead to a better way of living and it would also improve their economic condition as well. (Baithe, 2010) in the study of the adoption of pineapple cultivation practices in Manipur reported that 100 percent of the farmers felt that the lack of credit facility, cold storage and processing unit were the main constraints, price fluctuation, lack of transport facility, involvement of middlemen, lack of knowledge, high cost of input, lack of group approach and no social relation with neighbouring farmers. **(**Nath and Pandey, 2011) on a study in Bhubaneswar found that the major constraints contributing to the high cost of production of pineapple is the manual weeding which accounts for nearly 40 per cent of the total cost and the non-availability of laborers, increasing labor wages and also labor management aggravate the problems This was similar with constraints in mango production (Reddy, 1997).

II. MATERIALS AND METHODS

Keeping the objectives of the study, primary data required for the present study was collected from the respondents by using interview schedule and observation. The primary data with respect to constraints in production and post-harvest management of pineapple were collected from the sample respondents by personal interview method from the selected pineapple growers with the help of a survey method with the help of a well-structured pre-tested schedule. Thereafter, 120 pineapple growers were selected by random sampling technique from all the three size farm groups from the selected villages respectively. The constraints in cultivation of pineapple crop of the study area elicited through open end question. The entire data was transformed into normal score for tabulation Based on the responses obtained from the pineapple growers, frequency and percentages were calculated for each constraint faced by the pineapple growers.

III. RESULTS AND DISCUSSIONS

General problems of pineapple production and post-harvest management

3.1 Inadequate facilities of Transport and Communication:

The means of transport and communication are inadequately developed and defective in the study district. The district is very backward in respect of roads. Hundreds of villages lie at a considerable distance from the main roads. The villages are connected with mandis by roads, most of which become unusable during the rains. It was observed that most of the pineapple growing areas are connected by bridle path or kutcha road. As the pineapples are harvested during monsoon season, the kutcha road is not usable for motor transport. Majority of the pineapple growers in the area expressed the problems of inadequate facilities of transport and communication because of this, pineapple growers are forced to sell the produce in the village to the middlemen at a much lower price than the prevailing market rate.

3.2 Small Scale Production and Perishable Nature of the crop:

In the study area, although pineapple is grown on commercial basis, most of the units of production are still very small. Moreover, direct marketing at distant places is not possible as the quantity of production of individual growers are very small

and fruits are not ready for harvest at a time. The present system of handling of fruits in general and pineapple fruit in particular is found to be inefficient, unsatisfactory and outdated in the study area. The crops like pineapple are highly perishable and cannot be stored for a longer period after harvest. The improper pre- and post-harvest handling technique like absence of refrigerated vans for transportation, inappropriate packaging, lack of storage facilities etc lead to heavy losses to the farmers. The sample pineapple growers in the study area reported that small scale production and highly perishable nature of the crop as their main problems.

3.3 Lack of Cold Storage Facilities:

For perishable commodities like pineapple, the cold storage facilities are considered necessary to maintain its quality in fresh form. Lack of appropriate storage facility near the grower field is one of the major causes for which a considerable quality of pineapple gets damaged before reaching the final consumer. Therefore, the cold storage facility to store the fresh produce at the time of low price offered in the market is necessary. Because of high cost for cold storage construction farmers were unable to have the cold storage with their own cost. Hence farmers fail to get better price in the market. They dispose their goods at whatever the price prevailing in the market.

3.4 Lack of Food Processing Unit:

The horticulture development is not possible without the establishment of processing industries. Fruits and vegetables in general and pineapple fruits in particular are processed into very useful products such as jams, squash, sauce, etc. These industries play an important role in generating the income of the farmers. But in the study area there is no such processing industry, which uses fresh fruits as raw materials to make the useful by-products.

3.5 Lack of Finance:

The cultivator is a man of small means. There is no adequate credit facility to the farmers by the agencies in the study area. These people are usually dependent upon the commission agents (money lenders) for finance. Most of the farmers take loan from these money lenders to fulfil the requirements related to the production of these crops. But these people charge very high rate of interest from producers and compel the farmers to sell their produce through them. Thus, the growers sell their output even at low prices.

3.6 Dominance of Traders in Unregulated markets:

During the survey, it has been found that large numbers of intermediaries like wholesalers and retailers were involved in marketing of pineapple fruits in the study area. Prevalence of intermediaries in the marketing channel results in unfair and exploitative practices in marketing of fresh produce. They exploit farmers financially in different ways such as loading and unloading, counting in numbers, commission etc. it lessens the share in consumer rupee and the farmers have to accept low rates. Dominance of many of the intermediaries in between the supply chain robs the lion's share of the producers by deeply penetrating the consumer's pocket.

3.7 Absence of Regulated Marketing System:

It has been found during the survey that absence of unorganized marketing system for pineapple near the growing centre is yet another major problem faced by the growers in the study area. Marketing of fresh pineapple faces a number of problems due to their bulky nature, seasonality and high degree of perish abilities. It is generally believed that the growers do not get remunerative prices for their produce, while the consumers have to pay high price for the same.

3.8 Lack of Proper and latest information:

Reliable and timely market information is essential for producers, traders and consumers if market mechanisms are to work efficiently. Price information helps the farmers to take decisions about when and where to sell the produce so that a better price may be obtained. It has found during the survey that farmers in the study area have no knowledge regarding the pineapple prices prevailing in the nearby local markets. Farmers do not have latest information about the market prices of pineapple, changes in the demand and prospective prices of pineapple etc. Majority of the farmers do not have any source to get information about the market prices of pineapple in the nearby markets of the districts as well as in the distant markets.

Thus, they miss the opportunities to sell their produce at the right time and right place, so as to obtain the most remunerative price and they do not get proper margins.

3.9 High Price Fluctuation:

Pineapple is a perishable agro product. The period from June to August is reckoned as pineapple season period. In case production overtakes the demand in this period, the overproduction brings loss to the farmers. Moreover, the local and regional agents, traders attempt to lower the prices further. In short, perish ability of the crop, non-availability of the pre-sale, storage facility, lack of process industry plays important role in the loss of the farmers. In addition to that, farmers are not skilled in bargaining and this widens their further loss.

3.10 Lack of Unity and Organizational skill:

During the survey, it has been found that there is a lack of unity and organizational skill among pineapple growing community in Manipur, which has proved a major impediment in the formation of cluster groups and co-operatives among the selected farmers. They sell their produce individually. Because of their low bargaining power, they had to deal with traders having a strong organization. Moreover, these societies can raise the spirit of self confidence among the farmers, eliminate the intermediaries and ensure fair prices to both producers and consumers.

3.11 Lack of proper Packaging, Handling and Refrigerated Transport:

Adoption of proper packaging and handling in accordance with the climatic conditions is essential to improve the marketing efficiency. Special packaging and handling of ripe fruits are essential otherwise there are chances of wilts and rots in the process of transportation in the tropical climate. So far as the pineapple is concerned, packaging of fruits for transportation was not done in the study area. For this reason, transit loss was found in the study area for pineapple crops. Besides proper packaging and handling, refrigerated transport is essential for transportation of delicate fruits to distant places without deterioration of quality. But such facilities are virtually unknown in the study area.

The constraints both in production and post-harvest management are summarized in order of their importance.

TABLE 1
CONSTRAINTS IN PRODUCTION PROBLEMS FACED BY THE PINEAPPLE GROWERS

A. Production Problems		Number of respondents =120		
Sl. No.	**Problems**	**Number of farmers**	**Total in Percentage**	**Rank**
1	Problems of disease/insects/pest	120	100	I
2	High cost of planting material	120	100	I
3	Lack of resources i.e. money, equipment's	100	83.33	II
4	High cost of fertilizers	100	83.33	II
5	Lack of recommended package of practices	90	75	III
6	Non-availability of skilled labour	84	70	IV
7	Lack of micro-nutrients in soil	80	66.67	V
8	Lack of latest technical knowledge about the crop	80	66.67	V
9	Lack of improved varieties	80	60.67	VI
10	Lack of information about schemes and subsidies	77	64.17	VII

Farmer's perception about constraints in production of pineapple in study area was observed in Table 1. Major constraints pertaining to production of pineapple indicated that 100.00 percent farmers have the problem of disease/insect/pest, 83.33 percent farmers were the lack of resources, recommended packages of practices were 75.00 percent, 66.67 percent improved varieties and 66.67 percent respondents lack of micronutrients in soil. The farmers perceived that soil testing facilities should be created at least at block level in order to test soil fertility of land. The farmers further reported that they are not aware about the name and quantity of needed insecticides and pesticides in case if their crop is infected by any disease or pest.

TABLE 2
CONSTRAINTS IN POST HARVEST MANAGEMENT PROBLEMS FACED BY THE PINEAPPLE GROWERS

B. Post Harvest Management Problems		Number of respondents =120		
Sl. No.	**Problems**	**Number of farmers**	**Total in Percentage**	**Rank**
1	Lack of processing industries	120	100	I
2	Lack of storage facility	120	100	I
3	Lack of regulated and co-operative market	120	100	I
4	Fluctuation of prices	100	83.33	III
5	Due to high transportation charges	90	75	IV
6	Less no. of purchasers available in market	90	90	II
7	Heavy damage of fruit at time of transportation	90	90	II
8	Lack of infrastructure in the market	80	66.67	V
9	Lack of skilled labor for packing	78	65	VI
10	Lack of awareness of new technologies	75	62.5	VII

The major constraints are that all the farmers (100 percent) felt the lack of processing industries based on pineapple as shown in Table 2, due to which the pineapple growers are not getting more output from this enterprise. Majority of the growers face lack of storage facility and lack of regulated and co-operative market. Because of non-availability of regulated and co-operative market, farmers are forced to sell their produce in the hands of private intermediaries who exploit the farmers in one way or the other. This can be further established in the block level in order to get remunerative prices of their produce. About 83.33 percent of farmers feel difficulty in the fluctuation of prices. The pineapple sellers should come forward to give information about the prices and other aspects of pineapple in the daily newspaper. And about 75.00 percent had problem of high transportation charges. Further the farmers should be advised to grade the fruit at their own level to ensure the good prices of the produce.

IV. CONCLUSION

The constraints in production shows that the farmers perception about production of pineapple in study area was observed that 100.00 percent farmers have the problem of disease/insect/pest, 83.33 percent farmers was the lack of resources, recommended packages of practices was 75.00 percent, 66.67 percent improved varieties and 66.67 percent respondents lack of micronutrients in soil along soil testing facilities. The constraints in post-harvest management shows that all the farmers (100 percent) felt that the lack of processing industries based on pineapple, lack of storage facility and lack of regulated and co-operative market especially can be established in the block level in order to get the remunerative prices of their produce. 83.33 percent of farmers felt to difficulty about fluctuation prices and 75.00 percent had high transportation charges.

The study indicated that major constraints in production among different size was found that less awareness about new technologies and high price fluctuations was the major constraints in pineapple production in the study. Pineapple is an important fruit for the bulk of our population. Demand for pineapples has been expanding both locally and globally. As mentioned at the starting, the pineapple in Manipur are considered as the best in terms of its taste by the industry experts interviewed by the authors. Most pineapples are grown by small land holders. The size of the smallholders is detrimental to their negotiating power and has led to inert distrust in collectors. The establishment of cooperatives may assist them in increasing bargaining power of the growers and can also assist the buyers in reducing their transaction costs. There is a considerable disconnection between farmers and government extension services. Lack of awareness, interest and trust in government services seems to be some of the reason for it. While there is a need for information and knowledge, farmers source it from other farmers and other non-government stake-holder which may lead to impartial or inaccurate information been passed on to new entrants.

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