



Constraints Faced by Pineapple Growers in Tripura

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ABSTRACT

Agriculture is the main occupation of the inhabitants in Tripura and 80 per cent of the rural people depend on agriculture and allied sectors for the economic, food and nutritional security. Tripura has got highly suitable agro-climatic conditions to grow pineapple fruit. Livelihoods of many farmers largely depend on pineapple cultivation. However, pineapple cultivation is not delivering the desired output as it is constrained by several factors. Present study was conducted in year 2021 to delineate various constraints of pineapple cultivation and to determine difficulty level of each constraint as perceived by a random sample of 80 farmers. Various constraints were categorized as situational, technological, economic, social, environmental, infrastructure, and market related constraints. The major constraints identified were low rainfall, scarcity of water, labour intensiveness, high labour wage, high cost of cultivation, low adoption of scientific practices by neighbouring farmers, lack of group approach in farming, lack of infrastructure like; soil testing laboratory, agro-service centre, storage facilities and low-quality packaging. Lack of organised marketing facilities was the major concern for respondents-farmers. Future policy advocacies and agro-advisories for development of pineapple cultivation need to focus on combating aforesaid constraints in pineapple cultivation.

INTRODUCTION

Pineapple (*Ananas comosus*) is one of the most important commercial crops in India, ranking sixth with share of produces more than seven per cent of total world production of pineapple with productivity more than 15 t/ha against average productivity of 21 t/ha in the world (<http://apeda.in/agriexchange/Market%20Profile/one/PINEAPPLE.aspx>). India's position in terms of harvested area of pineapple (1,11,000 ha) is first among the Asian and BRICS countries (Roy & Bandyopadhyay, 2019). India export pineapple to Gulf countries as well as to European countries. North eastern region of India provides about half of the productions. Due to compatible agro-ecosystems it is grown as one of the major horticultural crops in north eastern states of India, out of which the state of Tripura's economy is highly influenced by pineapple cultivation that is a major source of livelihood and economic

security. Tripura produces an estimated 1.28 lakh MT pineapple every year in orchards spanning 8,800 hectares (Deb, 2020) and the farmer have carefully preserved a belief that "Pineapple would never betray them". That any crop may fail in an unfavourable circumstance, but pineapple is just a viable crop of survival, providing substantial income year after year (www.pineappleindia.com, 2008).

Pineapple is a natural fruit in the state of Tripura with favorable sub-tropical agro-climatic conditions, fertile slightly acidic soil, and abundant rainfall. The undulating tilla land with varying degrees of slope are highly susceptible to erosion so practices to check soil erosion through pineapple cultivation are vital. 'Queen' and 'Kew' ('Smooth Cayenne') are the main cultivars grown in different parts of Tripura. And also, spreading production into the off season plays a vital role in nutrition and livelihood opportunity for rural and tribal areas of the state for employment and income

generation (Das et al., 2014). Now-a-days Tripura pineapple industry is facing trouble. Nandannagar in the West Tripura district was a hotspot for pineapple cultivation; however, all but one of the orchards there are closed down. According to growers, business is at an all-time low and the fruit is selling at less than half of market rate. Pineapple farmers complained of huge losses due to absence of food storage and lack of procurement facilities by the government (Deb, 2020). The price variation of pineapple was low but pricing system of pineapple was not yet developed. The poor processing facilities restricts the expansion of acreage of pineapple. The lack of infrastructure facilities discourages the resource-poor farmers from expansion of area under this crop (Das et al., 2016). Even, inadequate transport facilities, non-availability of market in the locality, low marketable surplus, absence of market information, lack of organization among producers, problems of storage etc. are the major constraints in pineapple production (Sharma et al., 2016). Pineapple cultivation is not delivering the desired output as it is still highly unorganized, inefficient, and unprofitable in spite of having various policies and schemes by various government agencies (Pathak et al., 2015). Thus, pineapple cultivation is constrained by several factors. On this backdrop, present study was conducted in the state of Tripura to unravel the constraints with pineapple cultivation and associated difficulties experienced by the grower with each constraint.

METHODOLOGY

The study was conducted in purposively selected Sepahijala district of Tripura because of its popularity and production of pineapple. In the second stage of sampling, blocks having highest acreage and production of pineapple i.e. Boxonagar & Mohanbhog were selected purposively. The villages under these two blocks selected were: Kuluibari, Aralia and Kalapania, Diptali following random sampling technique. A probability proportionate simple random sampling was done for selection of 80 pineapple growers of these four villages as respondents of present study.

Perceived constraints were defined as factors perceived by individuals to inhibit or prohibit participation and enjoyment. Various constraints relating to pineapple cultivation were identified and categorized under situational, technological, economic, social, environmental, infrastructure, and market related constraints. Severity of each of the constraints based on the difficulties experienced by the pineapple growers were measured on five-point continuum: 'very high'-5, 'high'-4, 'moderate'-3, 'low'-2 and 'very low'-1. The responses of the sampled pineapple growers were taken in a structured interview schedule. Data were analysed to present mean perception score and standard deviation values for each constraint followed by deriving difficulty level of each constraint as well as of each above-mentioned category of constraints through index values.

RESULTS AND DISCUSSION

Evidently from Table 1, amongst the situational constraints, farmers perceived the scarcity of water with highest mean perception score (4.83) as well as difficulty level (96.50%); while other major constraints were undulated topography, shortage of irrigation water and drainage problem with mean perception score greater than 4.0

Table 1. Constraints perceived by the pineapple growers

S. No.	Constraints	Mean value (SD)	Difficulty Level (%)
A	Situational Constraints		
1	Scarcity of water	4.83(0.38)	96.50
2	Drainage problem	4.08(0.31)	81.50
3	Wastage of water through overflowing	1.59(0.59)	31.75
4	Shortage of irrigation water	4.34(0.48)	86.75
5	Undulated topography	4.41(0.50)	88.25
	Overall	3.85(0.63)	76.95
B	Technological constraints		
1	Infestation of weed	1.35(0.48)	27.00
2	Problem of insect	1.35(0.48)	27.00
3	Problem of disease	1.51(0.50)	30.25
4	Inadequate nutrient management	1.79(0.69)	35.75
5	Labour intensiveness	4.04(0.34)	80.75
6	Inadequate irrigation	4.25(0.44)	85.00
	Overall	2.38(1.48)	47.63
C	Economic constraints		
12	Financial problem(lack of fund)	4.96(0.19)	99.25
13	High cost of cultivation	4.76(0.43)	95.25
14	High labour wage	4.64(0.48)	92.75
15	Lack of credit facility	2.10(0.61)	42.00
16	Lack of ownership of land	2.01(0.54)	40.25
17	Poor yield	4.09(0.56)	81.75
	Overall	3.76(0.98)	75.21
D	Social constraints		
18	Low adoption of improved practices by neighbor	2.18(0.47)	43.50
19	Lack of group approach in farming	2.36(0.51)	47.25
	Overall	2.27(0.73)	45.38
E	Environmental Constraints		
20	Low rainfall	4.74(0.44)	94.75
21	Drought	1.25(0.44)	25.00
22	Occurrence of flood	1.35(0.48)	27.00
	Overall	2.44(0.64)	48.92
F	Infrastructure Constraints		
23	Lack of soil testing laboratory	4.03(0.62)	80.50
24	Inadequate supply of electricity for irrigation pumps	1.94(1.04)	38.75
25	Lack of agro service centre	4.26(0.47)	85.25
26	Lacking of storage facilities	3.66(0.78)	73.25
27	Low quality packaging	3.76(0.82)	75.25
	Overall	3.53(1.05)	70.60
G	Market Related Constraints		
28	Non availability of fertilizer in time	3.73(0.84)	74.50
29	Non availability of plant protection chemical	3.76(1.11)	75.25
30	Low price of farm produce	4.19(0.42)	83.75
31	Lack of market facility	4.39(0.67)	87.75
32	Lack of postharvest value addition	3.86(0.78)	77.25
	Overall	3.99(0.56)	79.70

on a 5-point continuum scale and very high difficulty level (>80%). Overall perception of situation constraints and difficulty level experienced by the pineapple growers is found quite high. Similar to findings of present study, farmers in Kollam district of Kerala faced scarcity of water and shortage of irrigation water as major constraints which had to give immediate attention (Chandran & Pondikunju, 2021). Lack of irrigation is also reported as major constraint in Himachal Pradesh (Singh & Hansra, 2021). Contrastingly, in Darjeeling district of West Bengal, the farmers were

aware about irrigation but they also had to pay extra for groundwater irrigation in pineapple cultivation (Roy & Bandyopadhyay, 2019).

Technological constraints used to hinder pineapple cultivation and cause difficulties to the pineapple growers. It is evident that overall difficulty level of the pineapple growers due to technological constraints is found relatively less (mean value 2.38) that may be attributed to the scientific cultivation technologies being advocated by ICAR Research Complex for NEH Region Tripura Centre (2005). The perceived difficulty level with respect to irrigation and labour problem is found to be 85 per cent and 80.75 per cent, respectively. However, other four constraints have not caused greater difficulties as evident from relatively lower values (27% to 36%). Chandran & Pondikunju (2021) reported that workforce in agriculture is declining day by day in Kerala. Shasani et al., (2020) observed that application of improper dose of micronutrient as third most serious constraints faced by farmers of Odisha. Sankaran et al., (2006) mentioned that in Tripura there is no proper collection, improvement and application of agro-techniques for Pineapple. According to Roy & Bandyopadhyay (2019), pineapple growers of Darjeeling district in West Bengal were facing highest technological gap in use of fertilizer and lack of awareness about the dose of the application; they were facing difficulty due to non-availability of plant protection chemical resulting in difficulties in pest management. Roy et al., (2013) stated that the problems faced by the majority of the pineapple farmers in West Bengal are lack of knowledge about updated technologies of pineapple cultivation that underline the importance of effective extension programme, which will improve knowledge, skills and attitude of pineapple growers facilitating adoption of latest package of practices of pineapple cultivation.

Evidently, farmers perceived the financial problem (lack of fund) with highest difficulty level (99.25%) followed by high cost of cultivation (95.25%) and high labour wage (92.75%). Overall, the economic constraints were found at a higher level with perceived mean value of 3.76 and difficulty index value 75.21 per cent. Similar findings were also reported by Shasani et al., (2020); Gupta et al., (2020); Chandran & Pondikunju (2021); Singh & Hansra (2021). Present study shows that lack of credit facility as well as lack of ownership of land were perceived lowly as financial support has been given to the farmers by the state government; however, contrastingly, Shasani et al., (2020) stated that lack of credit facility was considered as the major economic constraint faced by farmers of Odisha. To combat economic constraint of pineapple cultivation in Darjeeling district of West Bengal pineapple growers were supported by government or other organization financially (Roy & Bandyopadhyay, 2019).

Existence of social constraints that hamper pineapple cultivation and cause difficulties to the pineapple growers were also present. Overall social constraints exist at a lower level with mean perceived value of 2.27 on a 5-point continuum. Low adoption of improved practices by the neighbor caused difficulty level of 43.50 per cent in adoption by the respondents. However, for the lack of group approach in farming, the perceived difficulty level was 47.25 per cent. According to Kumar et al., (2021), lack of cooperation among the community considered as 7th major constraint faced by

the farmers of Haryana. This growing concern to combat social constraints warrant institutional interventions like farmers producer organization (FPOs) for sustainable and profitable pineapple cultivation.

Environmental constraints have also hampered pineapple cultivation and caused difficulties to the pineapple growers. Overall environment constraints belong at a lower level with mean perceived value 2.44. The perceived difficulty level with respect to low rainfall was found to be 94.75 per cent. However, the perceived difficulty level with occurrence of drought and flood was very low (25-30%). Kumar et al., (2021) & Shasani et al., (2020) also mentioned the problem of low and erratic rainfall during the wet season in Haryana and Odisha, respectively. Similar to the findings of present study, Feroze et al., (2019) stated that the temperature is raising and rainfall is declining in Tripura. Also, water availability has decreased and pest and disease infestation has increased, so the pineapple farmers are facing a lot of problems for sustaining production.

Farmers perceived the constraints of lack of soil testing laboratory with difficulty level of 80.50%. Farmers were facing difficulty due to lack of agro-service centre, low-quality packaging and lack of storage facilities at high levels (70-85%). Contrastingly, inadequate supply of electricity for irrigation pumps perceived as a constraint of low difficulty level (38.75%). Kumar et al., (2021), found in their study that farmers had high awareness of soil testing laboratory located nearest to them along with least knowledge about the procedure, dose of fertilizer to be applied. Even infrastructural constraints in pineapple cultivation in West Bengal are reported with improper fertility management due to lack of soil testing facilities, poor pricing system of pineapple and poor processing facilities restricting the areas and production of pineapple (Das et al., 2016). The lack of infrastructure facilities discourages the resource-poor farmers from expansion of area under pineapple crop.

Various market related constraints faced by the farmers in pineapple cultivation are also presented in the study. Overall, marketing constraints prevail at a high level with perceived mean value of 3.99 as well as difficulty level (79.70%). Evidently, farmers perceived the constraints of non-availability of fertilizer in time with difficulty level 74.50 per cent. Farmers were facing difficulty due to low price of farm produce and lack of market facilities at high level (75-90%). Lack of post-harvest value addition perceived with difficulty level of 77.25 per cent. Thus, overall difficulty faced by the respondents due to the market related constraints was quite high. Similarly, according to Roy and Bandyopadhyay (2019) pineapple growers of Darjeeling district in West Bengal had a very little knowledge about post-harvesting. They mentioned the built up of one cold storage for pineapple but no functional; once it becomes operational and accessible, farmers opined that will help them in future to get maximum profit from their pineapple production. In another study, it is mentioned that 55 per cent of the farmers felt the shortage of the fertilizer in time, 56 per cent of the farmers faced storage loss due to marketing constraints, also consider fluctuation of farm produce as the biggest constraints (Reema et al., 2020). Sharma et al., (2016) highlighted the marketing constraints in Nagaland in terms of inadequate transport facilities, non-availability of market in the locality, low marketable surplus, absence of market information, lack of organization among producers,

and problems of storage, which are in conformity of the findings of present study. Hossain & Islam (2017) stated that every year in Bangladesh large amount of pineapple damaged for lack of storage and transportation facilities. The pineapple growers compelled to sell the pineapples at a low price in peak season due to lack of proper marketing facilities. Das et al., (2014) also reported fluctuating market price and finding appropriate market price of produces as marketing constraints.

It is worth mentioning from present study that farmers in Tripura perceived overall highest difficulty level in market related constraints (79.70%) followed by situational constraints (76.95%), economic constraints (75.21%), infrastructure constraints (70.60%). Also, farmers were facing overall difficulty level in environmental constraints (48.92%), technological constraints (47.63%) and social constraints (45.38%). Present study unraveled major constraints in pineapple cultivation which are lack of market facilities, scarcity of water, financial problems (lack of fund), high cost of cultivation and high labour wage, lack of infrastructures like soil testing laboratory, agro-service centre and storage facilities, and low-quality packaging. Besides other minor constraints identified labour intensiveness, low rainfall, inadequate irrigation, low adoption of improved practice by neighbor and lack of group approach in farming.

CONCLUSION

The marketing constraints followed by situational, economic and environmental constraints warrant attention to combat to bring about improvement in pineapple cultivation and pineapple growers' livelihoods. Small pineapple growers were facing marketing problems and were selling the pineapples at a low price with poor return. Post-harvest management including poor processing, packaging and marketing facilities restricted the expansion of pineapple cultivation. Pineapple farmers indicated their concerns towards changing climatic scenario resulting in fluctuating temperature, erratic rainfall, and water shortage during crop growth period. The existence of economic constraints of farmers like lack of fund, high labour wage, and cost of cultivation were restricting expansion of area and production of pineapple cultivation in Tripura. Lack of adequate agro-service and soil testing centres as well as storage facilities need to be given attention for required infrastructure development.

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