

Adoption of Pineapple Cultivation Practices by the Farmers in Manipur State

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ABSTRACT

The study was conducted in four villages of Samulamlan block, Churachandpur District. The results indicated that majority of the respondents had medium extent of adoption followed by high category and low adoption category. Cent per cent adoption was observed in practices such as selection of Kew variety, use of mechanical hand weeding for intercultural operation, use of desuckering as after care of ratoon crop, use single Row System as the best method of planting, dependent on rainfed irrigation, followed ordinary type of storage and ripening. The socio-economic attributes like education, land holding, annual income, attitude towards modern agricultural technology, mass media exposure, extension contact, information sources used, value added product management show the positive and significant relation with adoption level of pineapple growers

Key words: *Pineapple Growers; Adoption; Personal and Socio-economic attributes;*

Pineapple (*Ananus comosus L. Merr*) is one of the most important commercial fruits of the world. In India, commercial cultivation of pineapple started only 3 or 4 decades ago. Pineapple is grown in 90 thousand hectares with annual production of 13.10 lakh tonnes. At present, the total area under pineapple cultivation is only 2.15 per cent of the total area under fruits and the production is 2.75 per cent of total fruit production in India. In North- East India, Manipur is one of the leading pineapples producing State (*Meitei, 1977*) owing to its salubrious climate and soil type. The prevailing wide agro climate conditions of Manipur make it possible to cultivate pineapple throughout the year. It has an average temperature of 20-36°C and receives excellent sunshine during summer and winter season. Pineapple has been cultivated in all the nine districts of Manipur. Main varieties cultivated are Kew and Queen. Economically the fruits have also become the backbone of a sizeable section of farmers who have been cultivating it as their major source of income. Pineapple cultivation can be an alternative industry for generating large employment and major source of income in Manipur.

As per a survey conducted by Directorate of Horticulture and Soil Conservation, Manipur during the

year 2007-2008, 8,468 hectares of land is under pineapple cultivation in Manipur with a production of 72,417 tonnes of pineapple fruits. The average yield is 8.51 tonnes/ha as against 40-50 tonnes yield potentiality. The low yield of pineapple in Manipur may be due to lack of adoption of innovation technology such as high density planting, judicious use of fertilizers, weed control continuous cropping in the foothills, terrain cultivation with proper soil conservation measures etc. The most challenging task being faced by the pineapple grower in Manipur is the marketing of the products. Transportation is also a major problem faced by the pineapple growers of Manipur. In the absence of the reliable fruit processing factory and cold storage facilities, pineapple fruits amount to one of the largest wasted produce among the perishable horticultural produces. Viewing all these problems, the present study was conducted with the objective of examining the extent of adoption of pineapple cultivation practices by the tribal farmers in Manipur state.

METHODOLOGY

The study was conducted in Churachandpur district of Manipur. Out of five sub-divisions of Churachandpur

district, Churachandpur sub-division was selected purposively. From the 5 blocks of Churachandpur sub-division, Samulamlan block was selected based on the maximum area cultivated under pineapple. Four villages namely Bunglon, Harmontlang, Koirentak khunou and Khouabung village respectively were selected from 92 villages of Samulamlan block. Finally a sample size of 150 respondents was selected based on proportional random sampling. The data were collected using pre-tested structured schedule by personal interview method. The extent of adoption of important cultivation practices i.e selection of suitable soil/site, selection of variety, selection of planting material, land preparation, planting method, application of manure and fertilizer, intercultural operations, after care of ratoon crop, use of growth regulator for flowering induction, management of pest and diseases, harvesting, packaging and transport, storage and ripening and marketing of the pineapple produced were considered for the study.

RESULTS AND DISCUSSION

Adoption of Pineapple Package of Practices- The data was with regards to the adoption of 14 packages of practices by the pineapple growers. Some of the individual were adopting package of practices in full, or not adopted at all while among some practices, partial adoption was also recorded. The results are presented in Table-1

Selection of suitable soil/site: It was observed that majority of the respondents (88.67 %) fully adopted hill areas as their site of planting pineapple followed by 11 per cent adoption of moderate slope in full and none of the respondents adopted plain area. The reason might be lack of plain area as the district where research was conducted is hilly areas.

Selection of variety: All the respondents were found adopting queen variety. This may be due to good taste, pleasant aroma and flavour of queen variety.

Selection of planting material: Among the sample of respondents, 92 per cent of them adopted in full and only 7 per cent adopted partially, the sucker as planting material. The reason may be due to easily availability of suckers in the field. About 82 per cent did not adopt crown as planting material, and 18 per cent were found adopting partially. However, cent per cent respondents did not use slips as planting material. Lack of knowledge

may be the reason for less and non-adoption of crown and slips as planting material.

Land Preparation: Nearly 79 and 20 per cent of respondents have fully adopted trenches and raised bed land preparation method respectively. The possibility of adopting trench method of land preparation by majority may be to prevent from soil erosion to some extent since the area is mainly hill area, soil erosion is very prone.

Planting method: All the respondents adopted single row system 60 × 60 cm method of planting. Non-adoption of other method of High Density Planting may be due to lack of knowledge and less fertile soil.

Manure and fertilizer: Partial adoption of urea as fertilizer was recorded in majority of the respondents (71.33%) followed by only 9 per cent in case of SSP and 6 per cent of the respondents adopted urea as fertilizer in full. However, 22 per cent respondents partially adopted FYM as manure followed by 8 per cent respondents adopting FYM in full.

None of the respondents were found using MOP and micro-nutrients, the reasons may be due to lack of knowledge, high cost of fertilizer and also lack of interest.

Intercultural operations/ Irrigation: All the respondents were found adopting mechanical method of intercultural operations and their source of water is totally dependent on rainwater.

After care of ratoon crop: Cent per cent respondents fully adopted desuckering and 25 per cent of them were also found fully adopting fertilization and earthing up after desuckering and 75 per cent respondent adopted it partially.

Use of growth regulator for flowering induction: None of the respondents were found using plant growth regulator for flowering induction. This may be due to lack of knowledge and awareness.

Pest and disease management: All the respondents did not apply any pesticide/ fungicide for pest and disease control in their pineapple orchards. The reason was due to lack of conviction about recommended pest and disease management practices and lack of skilled labour.

Harvesting: About 57 per cent respondents fully adopted harvesting their pineapple fruits when it is green but matured for local market followed by 16 per cent of them partially. However, none of the respondents adopted harvesting at 75-80 per cent maturity for distant market.

Table 1. Item analysis of extent of adoption of pineapple package of practices

Package of practices	Extent of adoption					
	Adopted		Partially Adopted		Not Adopted	
	No.	%	No.	%	No.	%
<i>Selection of suitable soil/site</i>						
Plain	-	-	-	-	150	100
Moderate slope	17	11.3	-	-	133	88.67
Hill	133	88.67	-	-	17	11.33
<i>Selection of variety</i>						
Kew(canning)	150	100	-	-	-	-
Queen (table)	-	-	-	-	150	100
<i>Selection of planting material</i>						
Sucker	138	92	-	-	-	-
Slips	-	-	-	-	150	100
Crown	-	-	12	8	123	82
<i>Land preparation</i>						
Raised beds	31	20.67	-	-	119	79.33
Trenches	119	79.33	-	-	31	20.67
<i>Planting method</i>						
Single row system 60 × 60 cm	150	100	-	-	-	-
Double row system	-	-	-	-	150	100
Triple row system	-	-	-	-	150	100
<i>Manure and fertilizer</i>						
F.Y.M	13	8.67	34	22.67	103	68.66
Urea	9	6	107	71.33	34	22.67
SSP	-	-	14	9.33	136	90.67
MOP	-	-	-	-	150	100
Micro nutrients	-	-	-	-	150	100
<i>Intercultural</i>						
Mechanical weeding	150	100	-	-	-	-
Chemical weed control	-	-	-	-	150	100

<i>Irrigation</i>						
Rainfed irrigation	150	100	-	-	-	-
<i>After care of ratoon crop</i>						
Desuckering	150	100	-	-	-	-
Fertilization and earthing up after desuckering	-	-	-	-	150	150
Use of growth regulator	-	-	-	-	150	150
<i>Pest and disease management</i>						
Mealy bug/wilt	-	-	-	-	150	100
<i>Storage rot, soft rot, fruit rot etc.</i>						
Good drainage	27	1815	10	108	72	
Healthy planting material	97	64.67	35	23.33	18	12
Spray of defoliation	-	-	-	-	150	150
<i>Harvesting</i>						
Green but mature for local market	86	57.33	24	16	40	26.67
75-80% maturity for distant market	-	-	-	-	150	100
<i>Packaging and transport</i>						
Jute sack	17	11.33	36	24	97	64.67
Transport	112	74.67	38	25.33	-	-
<i>Storage and ripening</i>						
Ordinary	150	100	-	-	-	-
Cold storage	-	-	-	-	150	100
Ethrel treatment	-	-	-	-	150	100
<i>Marketing</i>						
Local market/city	137	91.33	-	-	13	8.67
Export to other state	-	-	-	-	150	100
Processing unit	13	8.67	-	-	137	91.33

Table 2. Distribution of respondents based on their overall adoption scores on recommended pineapple cultivation practices

Category	No.	%
Low adoption	15	10
Medium adoption	98	65.33
High adoption	37	24.67
Total	150	100.0

Table 3. Correlation Coefficient (r) of characteristics of the farmers with adoption of pineapple cultivation

Characteristics	(r)
Age	-0.298**
Education	0.691**
Family size	0.030 NS
Land holding	0.292**
Annual income	0.561**
Innovation proneness	0.042 NS
Attitude towards modern agril. tech.	0.546**

*Significant at 0.05 level of significance

**Significant at 0.01 level of significance

Packaging and transport: Majority of the respondents (75.00%) fully adopted transporting their produce by head load/ cart load/ lorries/tractor etc. Only 25 per cent of the respondents fully adopted packing of their produce in Jute sack followed by 24 per cent of the respondents adopting it partially.

Storage and ripening: Cent per cent respondents were found adopting ordinary method of storage and ripening. None of them adopted cold storage method and ethrel treatment. The reasons may be due to lack of cold storage and proper storage facilities and lack of knowledge about ethrel treatment for ripening.

Marketing: Majority of the respondents (91.33%) sold their products at local markets and only 8 per cent respondents at processing unit. None of them export their products to other State/Country due to lack of transport facilities and marketing knowledge and greater involvement of middleman

Overall adoption of Pineapple cultivation Practices: Table 2 reveals that majority (65.33%) of the respondents had medium extent of adoption followed by high level of adoption (24.67%). Only (10.00%) of the respondents had low extent of adoption. This result in the line with finding of Reddy (1992) and Yadav *et al* (2006).

Relationship between Personal, Socio-economic and Psychological Characteristics and adoption of Pineapple Cultivation Practices: It is inferred from Table 3 that socio-economical attributes like education, land holding, annual income, attitude towards modern agricultural technology, mass media exposure, extension contact, information sources used, value added product management, achievement motivation and agri-business management show the positive and significant relation

with adoption level of pineapple growers. However, age indicated negative and significant association with adoption level of pineapple growers which shows that older the age of the farmers, the higher was the adoption of pineapple cultivation practices. Whereas family size, innovation proneness and level of aspiration show non-significant association with adoption level of pineapple cultivation.

CONCLUSION

From the findings, it can be concluded that majority of the respondents had medium extent of adoption followed by high level and only ten percent had low extent of adoption. Out of the fourteen characteristics, eleven characteristics were found to have a significant relationship with the adoption level of the farmers. Practices which were not adopted by cent percent of the respondents were plain area as their site of planting pineapple, kew as their variety, slips were not used as planting material, non adoption of Double Row System, Triple Row System, Chemical weeding was not done, non-adoption of irrigation, non adoption of growth regulators for flowering induction, management of pest and diseases mainly mealy bug/wilt as well as spray of Captan were not practiced, harvesting, i.e 75-80% maturity for distant market, cold storage & ripening were not practiced and cent percent of the respondents did not apply murate of potash and micronutrient fertilizers. The study suggests that the practices which were not adopted by the farmers, should be given due attention by extension agencies, so that the existing level of adoption of such practices can be increased.

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