Plant Archives Vol. 21, No. 2, 2021 pp. 859-863 e-ISSN:2581-6063 (online), ISSN:0972-5210

Plant Archives

Journal homepage: http://www.plantarchives.org
DOI Url : https://doi.org/10.51470/PLANTARCHIVES.2021.v21.no2.135

IMPLICATION OF INDIGENOUS FARMING PRACTICES ON THE EMPLOYMENT AND INCOME PATTERN FOR THE SELECTED HORTICULTURAL CROPS OF NAGALAND AND MANIPUR STATES OF INDIA

Th. Motilal Singh[1] and Amod Sharma[2]
[1] ICAR-KVK, Imphal West, ICAR-RC for NEHR, Manipur, India
[2] Department of Agricultural Economics, SASRD, Nagaland University, India

(Date of Receiving-26-02-2021; Date of Acceptance-06-05-2021)

ABSTRACT

A study on implication of indigenous farming practices on the employment and income pattern for the selected horticultural crops of Nagaland and Manipur States of India reveals that the total overall land holding in Nagaland is recorded as 106.25 ha while in Manipur it is 92.18 ha of land recorded as per the data, wherein on medium farm, it has maximum holding with 39.56 ha, 23.04 ha on small farm and 9.68 ha on marginal farm in Nagaland. As Manipur is concerned, small farm with 22.10 ha of land is the highest followed by marginal with 19.35 ha and it was least on medium with 18.63 ha of land. The income level (Rs/annum) of the farm households for the selected horticultural crops range from Rs. 11,058 to Rs. 18,456 & above and is found maximum under the high category and followed by medium and low categories respectively. The benefit cost ratio shows that cabbage is most profitable venture/enterprise followed by potato and pineapple. The impact of income and employment status during the selected period of Nagaland and Manipur shows that potato farming in Manipur is more profitable than Nagaland and it's almost 50.00 per cent of total investment which was found statistically significant at 1.00 per cent. Again, pineapple enterprise is also found profitable and it is around 26.00 per cent of the investment in Manipur as compare to Nagaland whereas cabbage crop also show 10.00 per cent enhancement against the input investment in Manipur as compare to Nagaland respectively. All the selected crops (Potato, Pineapple and Cabbage) are found statistically significant at 1.00 per cent with respect to income. Even the employment also shows same trend of income with an increment of 45.00 per cent additional profit of employment due to the management and labour cost, whereas pineapple also shows 27.00 per cent additional employment in Manipur as compare to Nagaland. The cabbage enterprise also shows 10.00 per cent additional employment as compare to Nagaland in Manipur. All the selected crops (Potato, pineapple, cabbage) are found statistically significant at 1.00 per cent with respect to employment.

***Keywords*:** Indigenous, farming, practices, crops, states

INTRODUCTION

The world's population is projected to reach 8.50 billion by 2030, 9.70 billion by 2050 and exceed 11.00 billion in 2100, with India expected to surpass China as the most populous around seven years from now and Nigeria overtaking the United States to become the world's third largest country around 35 years from now, according to a new United Nations report released today reported by Sachitanand (2018).

According to the report of "Future of Food and Agriculture, Trends and Challenges; 2017-FAO-United nation" major transformation in agricultural systems, rural economics and natural resource management will be needed if we are to meet the multiple challenges before us and realize the full potential of food and agriculture to ensure a secure and healthy future for all people and the entire planet. High-input, resource-intensive farming system, which has caused massive deforestation, water scarcities, soil depletion and high levels of green-house emission cannot deliver sustainable food and agricultural production, adds the report. Thus, Village-Community System of farming exists in different parts of the world becomes an indispensable part if the concept of sustainability arises. Different Taboos or culture and practices have been maintain in certain agricultural heritage site of the world and this heritage becomes the basis for their social, economic life since time immemorial *(Small Holders farming Mechanism)* (Meena and Punjabi, 2012).

Back to our nation, India's agricultural scenario was also facing the problems of population growth, post Independence political dilemma across the union of India and the great Famine during the two decades had led to the rise of Green Revolution in the 60s. With these, agricultural modernization emerged and the India's food grains production figure became almost the doubled. Agriculture infrastructural development had given priorities during the India's Five Years Plan and resulted in a positive impact on the production scenario of the nation till she witnessed an

irregular and sharp declined in the production and productivity level of some major food crops. Eminent Scientists, Experts, Policy makers & Planners and different Stakeholders reveals that the country un-sustainability like scenario in the entire agricultural system may be attributed by many factors such as injudicious use of synthetic inorganic inputs in the production processes, deterioration of natural resources and society-triggered climate change phenomena (Schreinemachers *et al.*, 2018).

It is also estimated that the India's population will reach 1.51 billion by 2030. Again with the advancement of Health Sciences, Indian consumers are realizing on the healthy food for the future perspectives. The present Government of India also emphasizes on the Doubling of Farm Income through various technologies intervention on sustainable approach by 2022. Bringing or balancing the entire scenario on the sustainable basis requires integrated and cumulative efforts of different stakeholders from "Top to Bottom or Bottom to Top" approach through indebt study and understanding of the present existing systems and their nature of resource management patterns (Panneerselvam *et al.*, 2012).

Again focusing on the North Eastern India, the total agricultural scenario is quite peculiar and can be differentiated from the agricultural system of Northern, Central and Southern India's agricultural practices or patterns. The entire region comprises of seven hilly states *viz*. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura (Mintesnot, 2016).

The North-Eastern states of India are inhibited by several Indigenous people having various cultural, political, social and economic values. The region has a rich flora and fauna and is considered as biodiversity Hotspot of many crops. North-Eastern region has a huge potential for growth and development in agriculture and allied sectors as the region is endowed with various Indigenous socio-economic aspect of farming. The *Apatani*; *Bun; Zabo; Zero Tillage* and *Fruit-Based system* of farming can be mentioned. The region is considered or assumes as low uses of synthetic inputs and even some states are declared as Organic states and many more are on the pipeline of organic states. In fact, majority of the agricultural land areas are declared as "Organic by Default" and even some states are also considered as less or minimum inorganic user states. The present study is all about the sustainability of the indigenous farming practices and its implication on the employment and income pattern for the selected horticultural crops of Nagaland and Manipur states that have been prevailing in the north-eastern region of India so as to put the entire system in the domain of the various stakeholders (Singh and Sharma, 2020c).

MATERIALS AND METHODS

The present study has been carried out in the state of Manipur and Nagaland in consultation with the organizations and the line-departments working in the field of Organic farming at the first and secondly the feasibility of the researcher. A multi-stage- random sampling technique have been used for the selection of sample units. Both purposive and cluster sampling method have been used for the selection districts, blocks from the states of Nagaland and Manipur and finalization of the sample size. In the last stage of sampling, the farmers who cultivate pineapple and potato & cabbage from these two states were surveyed for the selection of districts; blocks and villages. 300 farmers (150 respondent farmers from Manipur and 150 respondent farmers from Nagaland) were selected for each crop (i. e; 50 farmers / crop) for the data collection of the above crops. Various statistical tools and measures were used in the analysis of the data so as to work out the ultimate inference (Singh and Sharma, 2020a).

RESULTS AND DISCUSSION

Table 1 reveals the employment and income levels of the sample respondents in Nagaland and Manipur state. The employment level of the farm households have been respectively categorized into 3 groups (low up to 180; medium 181 to 237 and high 230 & above). It is found that the maximum numbers of farm households for the selected horticultural crops of Nagaland is in the high category followed by medium category and the least is in the low category. The same pattern is also found in the state of Manipur as high, medium and low level of employments. In case of the pineapple crop, maximum employment to the farm households is in the medium category wherein Dimapur district is the highest followed by Thoubal district and least employment is in the low category. But in potato crop, maximum employment is offered to the high category group of which Nagaland Kohima district farm household is the highest and followed by Senapati district of Manipur respectively. However, the employment level given by the cabbage crop is maximum to the medium category wherein Kohima district is the highest followed by the Senapati district, respectively. Similar studies were carried out in the line with Pongener and Sharma (2018).

The income level (Rs/annum) of the farm households for the selected horticultural crops is also categorized into 3 groups (*i.e*. low-upto Rs. 11058; medium-Rs. 11058 to Rs. 18456 and high-Rs. 18456 & above). For the Nagaland state, the maximum number of farm households comes under the high category and followed by medium and low categories respectively. Whereas, it is found maximum in the medium level category and followed by high and low categories respectively for the state of Manipur. Similar studies were carried out in the line with Mozhui and Sharma (2020).

In case of the pineapple crop, maximum households come into the medium category of which Dimapur district of Nagaland is the highest and followed by Thoubal district of Manipur and the least comes into the low category farm households. Whereas, the maximum households come into the high level farm households of Kohima district for the potato crops followed by medium level and the least is found in the low level. For the potato crop, maximum farm households comes in the high level of income of which Kohima district is the highest and followed by Senapati district respectively whereas the least farm households comes in the low level of income groups. Again for the Cabbage crop, the highest number of farm households is in the medium income level of which Kohima district of Nagaland rank first and followed by the Senapati district of Manipur respectively. The least farm households come under the low income level group. Similar studies were carried out in the line with Singh and Sharma (2020b).

Table 2 reveals the impact of income and employment status during the selected period of Nagaland and Manipur. Further the data reveals that potato farming in Manipur is more profitable than Nagaland and it's almost 50.00 per cent

of total investment which was found statistically significant at 1.00 per cent. Again, pineapple enterprise is also found profitable and it is around 26.00 per cent of the investment in Manipur as compare to Nagaland whereas cabbage crop also show 10.00 per cent enhancement against the input investment in Manipur as compare to Nagaland respectively. All the selected crops (Potato, Pineapple and Cabbage) are found statistically significant at 1.00 per cent with respect to income. Similar studies were carried out in the line with Sharma (2016).

Even the employment also shows same trend of income with an increment of 45.00 per cent additional profit of employment due to the management and labour cost, whereas pineapple also shows 27.00 per cent additional employment in Manipur as compare to Nagaland. Even the cabbage enterprise also shows 10.00 per cent additional employment as compare to Nagaland in Manipur. All the selected crops (Potato, pineapple, cabbage) are found statistically significant at 1.00 per cent with respect to employment. Similar studies were carried out in the line with Singh and Sharma (2020a).

Table 3 highlighted the impact on employment and income status over a selected period for the selected horticultural crops of Nagaland and Manipur. Overall, for the impact on income is concerned, Nagaland has gain 42.00 per cent as against the 36.67 per cent in Manipur on high income group and among the medium income group is concerned, Nagaland has achieved 38.67 per cent as compare to 34.00 per cent of Manipur. Again it is recorded 29.33 per cent on Manipur as against the 19.33 per cent in Nagaland for enhancement in low income group and employment generation during the study period. Similar studies were carried out in the line with Singh and Sharma (2020d).

In case of the different crops, maximum employment is gained on medium group for pineapple crop followed by potato crops. Whereas among the district is concerned, maximum employment gain is recorded in pineapple crop, followed by cabbage and the least is on the potato crop. The total employment is recorded maximum at Medziphema district and least in Thoubal. Whereas, it is found maximum for potato crop at Zakhama and followed by Mao- Maram in Manipur. Again, it is Zakhama having maximum employment gain as compare to Mao-Maram. Similar studies were carried out in the line with Singh and Sharma (2020c).

However, the impact on income in Nagaland is concerned; it is recorded around 40.00 per cent enhancement on high income group followed by medium group and least on low income group, whereas in Manipur, 36.00 per cent income gain is recorded on medium group followed by high income group with 35.00 per cent and least on low income group. Similar studies were carried out in the line with Mozhui and Sharma (2020).

So far crop income is concerned, it was recorded maximum on pineapple crop with 48.00 per cent at Medziphema towards medium income group followed by cabbage crop with 45.00 per cent at Zakhama, even in Manipur state, Thoubal district is also leading within the state for gaining maximum income with 46.00 per cent enhancement, followed by 39.00 per cent gain for cabbage crop at Mao-Maram on high income group. Again for the minimum income enhancement is concerned, it is Zakhama with the minimum of 20.00 per cent gain as compare to 22.00 per cent increase at Thoubal towards the low income group. Similar studies were carried out in the line with Mozhui and Sharma (2020); Singh and Sharma (2020d).

CONCLUSION

An investigation into the implication of indigenous farming practices in the selected horticultural crops of Nagaland and Manipur states clearly shows that so far Manipur is concerned, small farm with 22.10 ha of land is the highest followed by marginal with 19.35 ha and it was least on medium with 18.63 ha of land. Also the income level (Rs / annum) of the farm households for the selected horticultural crops range from Rs. 11058 to Rs. 18456 & above and is found maximum under the high category and followed by medium and low categories respectively. The benefit cost ratio shows that cabbage is most profitable venture/enterprise followed by potato and pineapple. Also the small size farm group gain more benefit as compare to marginal, medium in pineapple farm, and even small farm also benefit more as compare to marginal and medium farm on potato crop, but on cabbage, medium farmers manage well to get more benefit as compare to small and marginal farmers respectively. All the selected crops (Potato, pineapple, cabbage) are found statistically significant at 1.00 per cent with respect to employment.

Policy Recommendations

1. The outcomes of the study clearly reveal that in terms of income and employment, productivity, holding and income from selected crops are significantly higher in the study areas. This acknowledges the positive impact of livelihood on the farming community and is expected to change the standard of living at the household level in the days to come
2. The selected horticultural crops is confined to area jurisdiction and therefore the farmers who are confined to this are getting benefits out of it with respect to income as well as employment from various management activities, those farmers who are far away from adoption are least benefitted with regard to income and employment from activities and soil and water conservations activities too.
3. The different selected horticultural activities and the adoption rate of mentioned activities is lower among the farmers across the different farm sizes. It necessities farm level education, awareness and capacity building among farmers to take the advantage and adoption of different development programmes of government in time.
4. Establishing financial framework for sustainable functioning of the selected horticultural crops and participatory planning has been found significant for upliftment of the farm household's economy.

Table 1 : Income and Employment level of Sample respondents in the study area (n = 300)

S. N.	Particulars	Pineapple crop		Potato crop		Cabbage crop		Overall	
		Dimapur	Thoubal	Kohima	Senapati	Kohima	Senapati	Nagaland	Manipur
A.	**Employment (Mandays / Annum)**								
1.	Low (180<)	8	12	21	32	19	22	29	44
2.	Medium (181 - 237)	24	22	34	29	47	37	58	51
3.	High (238 <)	18	16	45	39	34	41	63	55
Total		50	50	100	100	100	100	150	150
B.	**Income (Rs. / Annum)**								
1.	Low (< 11058)	9	11	22	33	20	24	31	44
2.	Medium (11058 - 18456)	24	23	35	31	45	37	59	54
3.	High (18456<)	17	16	43	36	35	39	60	52
Total		50	50	100	100	100	100	150	150

Table 2 : Impact on Income and Employment Status over a Selected Period of three years

S.No	Parameters	Nagaland		Manipur		% Change	't' test
		Mean	SD	Mean	SD		
A.	**Income (Rs.)**						
1.	Pineapple crop	3192.50	1218.01	4330.05	2062.34	26.271	4.577963 **
2.	Potato crop	14670.83	9784.27	28279.17	21990.56	48.121	6.702508 **
3.	Cabbage crop	975.33	351.35	1093.33	481.83	10.793	3.085567 **
Total		20349.38	11415.22	35422.00	24216.08	42.552	4.942874 **
B.	**Employment (Rs.)**						
1.	Pineapple crop	21.283	8.120	28.867	13.749	27.327	5.215270 **
2.	Potato crop	58.683	39.137	113.117	87.962	45.251	5.679833 **
3.	Cabbage crop	21.867	9.636	24.383	8.784	10.126	2.260137 **
Total		110.39	55.53	170.73	101.21	35.339	4.156683 **

NS - Non Significant & ** - Significant at 1 per cent level of significance.

Table 3 : Impact on Income and Employment Status over a Selected Period

S. N.	Particulars	Pineapple crop				Potato crop				Cabbage crop				Overall			
		Medziphema	Per cent	Thoubal	Per cent	Zakhama	Per cent	Mao-maram	Per cent	Zakhama	Per cent	Mao-maram	Per cent	Nagaland	Per cent	Manipur	Per cent
A.	Employment (Mandays / Annum)																
1	Low (180<)	8	16.00	12	24.00	21	21.00	32	32.00	19	19.00	22	22.00	29	19.33	44	29.33
2	Medium (181-237)	24	48.00	22	44.00	34	34.00	29	29.00	47	47.00	37	37.00	58	38.67	51	34.00
3	High (238<)	18	36.00	16	32.00	45	45.00	39	39.00	34	34.00	41	41.00	63	42.00	55	36.67
Total		**50**	**100.0**	**50**	**100.0**	**100**	**100.0**	**100**	**100.0**	**100**	**100.0**	**100**	**100.0**	**150**	**100.00**	**150**	**100.0**
B.	Income (Rupees / Annum)																
1	Low (< 11058)	9	18.00	11	22.00	22	22.00	33	33.00	20	20.00	24	24.00	31	20.67	44	29.33
2	Medium (11058 - 18456)	24	48.00	23	46.00	35	35.00	31	31.00	45	45.00	37	37.00	59	39.33	54	36.00
3	High (18456<)	17	34.00	16	32.00	43	43.00	36	36.00	35	35.00	39	39.00	60	40.00	52	34.67
Total		**50**	**100.0**	**50**	**100.0**	**100**	**100.0**	**100**	**100.0**	**100**	**100.0**	**100**	**100.0**	**150**	**100.0**	**150**	**100.0**

REFERENCES

Meena, G.L. and Punjabi, N.K. (2012). Farmer's Perception towards Agriculture Technology in Tribal Region of Rajasthan. *Rajasthan Journal of Extension Education.* 20: 92-96.

Mintesnot, H.D.A. (2016). Review on Contribution of Fruits and Vegetables on Food Security in Ethiopia. *Journal of Biology, Agriculture and Health Care.* 6(11): 2224-3208. ISSN 2225-093X (Online).

Mozhui, J. and Sharma, A. (2020). Status of Extent of Technology Adoption by the SRI Paddy growers in Dimapur District. *Journal of the Social Sciences.* 48(4). October: 2543-2548.

Panneerselvam, P.; Halberg, N.; Vaarst, M. and Hermansen, J. (2012). Indian Farmers experience with and perceptions of organic farming. *Renewable Agriculture and Food System.* 27(2): 157-169. Doi: 10.1017/s1742170511000238.

Pongener, B. and Sharma, A. (2018). Constraints Faced by the Fishery Enterprises: A SWOC Analysis. *International Journal of Current Microbiology and Applied Sciences.* 7(5): 1595-1603.

Sachitanand, R. (2018). As horticulture boom pushes up farm incomes, here are two key missing pieces. *Economic Times Bureau*. September 16. http//economictimes.indiatimes.com.

Schreinemachers, P; Simmons, E.B. and Wopereis, Marco C.S. (2018). Tapping the economic and nutritional power of vegetables. *Global Food Security*. 16(8): 36-45. https://doi.org/10.1016/j.gfs.2021.03.05.

Sharma, A. (2016). Sustainable economic analysis and constraints faced by the Naga King chilli growers in Nagaland. *Indian Journal Agricultural Research*. 50(3): 220-225.

Singh, Th. M. and Sharma, A. (2020). Cost and returns on various farm levels of selected major horticultural crops in the state of Nagaland and Manipur, India. *Plant Archives*. 20(2): 9095-9103.

Singh, Th. M. and Sharma, A. (2020). Resource-use-efficiency analysis for the selected major horticultural crops in the state of Nagaland and Manipur, India. *Plant Archives*. 20(2): 9113-9119.

Th. Motilal Singh and Sharma, A. (2020). Constraints Faced by the Pineapple crop Growers at various levels of Farms in selected districts of Nagaland and Manipur states. *International J. of Current Microbiology and Applied Sc.* 9(7): 2684-2695.

Th. Motilal S. and Sharma, A. (2020). Impact of selected Socio-Economic Variables on the Adoption of the Organic cultivation in the state of Nagaland and Manipur *International Journal of Current Microbiology and Applied Sciences.* 9(7): 2840-2850.