

Perception of tribal farmers on the issues of sustainable rice farming in Wayanad district of Kerala

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Abstract: The present study was conducted in Wayanad district of Kerala, to study the perception of tribal farmers on the issues of sustainable rice farming. Issues regarding the sustainable rice farming were identified and categorized into three viz., agro-ecological issues, technical issues and socio-economic issues. Lack of rainfall, fragmented land holdings and crop failure due to flood, drought and other natural calamities were the most serious agro-ecological issues perceived by the tribal rice farmers. Over use of chemical fertilizers and plant protection chemicals, pest and disease outbreak and lack of high yielding varieties suitable to local conditions were emerged as major technical issues. Related to the socio economic, conversion of rice fields into cash crops or commercial purposes, increasing labour wages and lack of agricultural labourers were the issues perceived by the tribal rice farmers.

Keywords: Tribal rice farmers; Sustainable rice farming; Agro-ecological issues; Technical issues; Socio-economic issues;

INTRODUCTION

Tribes are homogenous ethnic groups with a specific sense of identity based on common language and culture. In Kerala largest tribal population is in Wayanad district that is about 36 per cent. Wayanad typically is an agrarian economy with a rich history of paddy cultivation. Agriculture was the main occupation for most of the tribal communities and cultivation was mainly centered on paddy. They used traditional varieties over the high yielding varieties of the modern era. Owing to population increase in these communities, agricultural land area has shrunk considerably. As paddy is not remunerative, most of them have shifted to commercial crops such as banana, ginger and other crops. A number of factors have led to the drastic decrease in paddy cultivation among the tribal communities. The degradation of the environment, particularly the deforestation brought about by logging concessions, the increasing needs of an expanding population, government programs which support cash-cropping and thus more forest denudation, and climatic changes have translated into less irrigation water for the rice fields. This has led to the abandonment of rice fields, reduced production of rice, outmigration and a shift toward cash crops. In order to combat this threatening situation and make rice farming sustainable, the interplay of technical and socio-cultural practices need to be strengthened. The combination of green and animal manure, the availability of water, the correct reading of the biophysical signs for proper planting times and the socio-cultural regulations of the indigenous village leadership help to produce food for a significant portion of the population on a sustained basis. Donal and Donald (1995) have suggested that sustainable agriculture must meet four important criteria: (i) it must produce adequate food of high quality, (ii) be environmentally safe, (iii) protect the resource base, and (iv) be profitable. Unless the government gives substantial support for its revival and development, it may not be possible to shift back to this kind of rice production on a large scale. There is a strong need to adapt agricultural practices in order to increase the production of rice in a manner that is economically viable and environmentally sustainable. The various issues on sustainable rice farming perceived by tribal rice farmers need to be brought to light to tailor technology modifications to suit the area.

1. METHODOLOGY

Three panchayats of Wayanad district such as Thavinjal from Northern high hills (AEU 15), Panamaram from Wayanad central plateau (AEU 20) and Thirunelli from Wayanad eastern plateau (AEU 21) were selected as the locations for the study. A maximum of 30 tribal rice farmers from the identified panchayats were randomly selected in consultation with Krishi Bhavan concerned. Thus, 90 tribal rice farmers were the respondents for the study. Issues regarding the sustainable rice farming were identified from tribal and non tribal farmers, agricultural labourers, extension functionaries, social activists, NGOs etc. Focus group interviews and observation methods were employed for identification and inventorisation of the issues. After detailed focus group discussion, issues regarding sustainable rice farming were identified and categorized into three viz., agro-ecological issues, technical issues and socio-economic issues (Phenica, *et al.*, 2018), (Basyal, *et al.*, 2019). The responses from tribal rice farmers were obtained on a four point continuum namely most important, important, less important and least important with scores of four, three, two and one. Based on the response obtained, the perceived issues under each category were ranked. Issues with the highest score value was considered as the most serious one followed by others in the order of decreasing score values.

2. RESULTS AND DISCUSSIONS

The issues regarding sustainable rice farming in Wayanad district were identified and inventoried from different stakeholders through the detailed focus group discussion. The various issues of sustainable rice farming perceived by tribal rice farmers were categorized into three viz., agro-ecological issues, technical issues and socio-economic issues. The issues were ranked categorically based on the total score obtained for each issue. The issues perceived by tribal rice farmers were presented in Table 1.

Table 1. Perception of tribal farmers on the issues of sustainable rice farming

Sl. No.	Issues	Total score	Rank
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A. Agro-ecological issues			
1	Lack of rainfall	313	I
2	Fragmented land holdings	256	II
3	Crop failure due to flood, drought and other natural calamities	246	III
4	Inconsiderate use of soil and water resources	227	IV
5	Loss of natural enemies and beneficial organisms in rice field	210	V
	Mean score	250.40	
B. Technical issues			
1	Over use of chemical fertilizers and plant protection chemicals	237	I
2	Pest/ disease outbreak	230	II
3	Lack of high yielding varieties suitable to local conditions	228	III
4	Lack of strategies to conserve the genetic diversity of the rice gene pool	225	IV
5	Wild animal attack	224	V
6	Lack of knowledge on integrated farm management	223	VI
7	Unavailability of farm machineries	215	VII
	Mean score	226.50	
C. Socio-economic issues			
1	Less profitability in rice cultivation	240	I
2	Conversion of rice fields into cash crops/ commercial purposes	238	II
3	Lack of agricultural labourers	236	III
4	Increasing labour wages	235	IV
5	Lack of extension services/ government support for eco-friendly farming practices	226	V
6	Reluctance among youth to engage in rice cultivation	224	VI
7	Inefficient group farming/ Padashekara samities	224	VI
8	Lack of transportation facilities and adequate procurement channels	220	VII
	Mean score	230.36	

3.1 Agro-ecological issues

The data in Table 1 revealed that lack of rainfall (I rank), fragmented land holdings (II rank), crop failure due to flood, drought and other natural calamities (III rank), inconsiderate use of soil and water resources (IV rank) and loss of natural enemies and beneficial organisms in rice field (V rank) were the major agro-ecological issues perceived by tribal rice farmers in order of priority.

Tribal rice farmers grow their crop mainly in the monsoon season, and commencement of monsoon marks starting of sowing/transplanting crop. Late starting of monsoon has delayed their cropping time. Similarly, fragmented land holding was perceived as the second issue by tribal farmers, which has considerably reduced the rice cultivation throughout the district. Farmers were opinioned that flood, drought and other natural calamities were the major reasons for crop failure in their area. This issue along with late commencement of rain can be related to the climate change (Kang *et al.*, 2009).

Inconsiderate use of soil and water resources was perceived as fourth issue of sustainable rice farming by tribal farmers. Farmers revealed that decrease in the soil fertility is prevalent in the rice growing fields in the district, which has forced them to have reduced productivity. As the tribal farmers are fond of traditional rice cultivation and which is more favour to the environment, loss of natural enemies and beneficial organisms in rice field was the least perceived issue by them.

3.2 Technical issues

The technical issues were in the following rank order of over use of chemical fertilizers and plant protection chemicals (I rank), pest/ disease outbreak (II rank), lack of high yielding varieties suitable to local conditions (III rank), lack of strategies to conserve the genetic diversity of the rice gene pool (IV rank), wild animal attack (V rank), lack of knowledge on integrated farm management (VI rank) and unavailability of farm machineries (VII rank),

Tribal farmers revealed that the over use of chemical fertilizers and plant protection chemicals reduce the soil fertility, pollutes air and water and trim down the important nutrients of soil and minerals. The second most important technical issue perceived by tribal rice farmers was the pest/ disease outbreak as because of lesser resistance of their local rice varieties compared to high yielding varieties. Similarly, lack of high yielding varieties suitable to local conditions and lack of strategies to conserve the genetic diversity of the rice gene pool were perceived as the third and fourth technical issues respectively.

Crop damage by wild animal was another issue perceived by tribal farmers. The indigenous methods like guarding the fields, fences, animal traps, scarecrows (generally upright poles with a human scent or with noisy objects hanging from them) etc. were the possibilities practiced by farmers for minimizing animal disturbances. Lack of knowledge on integrated farm management by tribal rice farmers was another issue of concern. The declining trend of land availability poses a serious challenge to the sustainability and profitability of tribal farmers (Singh *et al.*, 2000). Under such situations, it is appropriate to integrate land based enterprises such as dairy, poultry, fisheries etc. along with rice cultivation.

Unavailability of farm machineries was the least technical issue perceived by the tribal farmers. As because of the blending of modern tools and implements has started mostly through custom hiring centres, unavailability of farm machineries was the least technical issue perceived by the tribal farmers. Tractor with cultivator was the most hired implements among the farmers. However,

tribal farmers listed that small size of land as the most serious constraint in adopting farm machineries as they are not economical for the small land size. Also, they have opined that imparting training to farmers is the most important activity towards improving the mechanization status in tribal areas.

3.3 Socio-economic issues

With regard to the socio-economic issues, less profitability in rice cultivation (I rank), conversion of rice fields into cash crops/commercial purposes (II rank), lack of agricultural labourers (III rank), increasing labour wages (IV rank), lack of extension services/ government support for eco-friendly farming practices (V rank), reluctance among youth to engage in rice cultivation (VI rank), inefficient group farming/ Padashekara samities (VII) and lack of transportation facilities and adequate procurement channels (VIII) were the major issues perceived by tribal farmers.

Less profitability in rice cultivation was the most important issue perceived by the tribal farmers. This was interlinked with the issue of conversion of rice fields into cash crops/ commercial purposes. As rice is not having remunerative price, most of them have shifted to commercial crops such as banana, ginger and other crops. Also, the various government programs which support cash-cropping has led them to the abandonment of rice fields, reduced production of rice, outmigration and a shift toward cash crops. With regard to lack of agricultural labourers and increasing labour wages, tribal farmers revealed that labour's efficiency was not in proportionate with the wage increase.

Lack of extension services/ government support for eco-friendly farming practices was another important issue perceived by the tribal farmers. They were opined that the impact of agriculture development programmes on tribal population was practically nil. Tribal farmers revealed that the lack of knowledge and interest on farming, change in life style, choice on non-agricultural jobs over agricultural job etc. were the major reasons for reluctance among youth to engage in rice cultivation. Inefficient group farming/ Padashekara samities and lack of transportation facilities and adequate procurement channels were the least socio-economic issues with respect to the tribal farming community.

3. CONCLUSION

This study explores the various issues of sustainable rice farming and their perception by the tribal rice farmers of Wayanad district of Kerala. Study identifies, that among the various issues faced by tribal farmers major issues were lack of rain fall, over use of chemical fertilizers and plant protection chemicals, less profitability in rice cultivation and conversion of rice fields into cash crops/commercial purposes. To the overall, it was observed that agro-ecological issues was the most serious issue perceived by tribal rice farmers with a mean score of 250.40, followed by socio-economic issues (230.36) and technical issues (226.50). These findings calls for the governmental bodies, research institutions, local agencies and other stakeholders to design plan and implement a proper strategy to increase the rice productivity on a sustainable basis and thereby supporting the livelihood and food security of people in Wayanad district.

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