



## Sustainable Farming Practices in Paddy Cultivation in Kanyakumari District: Challenges Encountered

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### ABSTRACT

'Sustainable Farming' involves cultural and management practices such as crop rotation, recycling of animal manures, and conservation tillage to control soil erosion and nutrient losses and to maintain or enhance soil productivity. Paddy (*Oryza sativa* L.), an important cereal crop serves as a staple food for more than one-third of the global population. Farmers are experiencing a lot of challenges in the adoption of sustainable farming practices. This study aimed to analyze the problems faced by the farmers in the adoption of the sustainable farming practices in paddy cultivation in Kanyakumari district of Tamil Nadu state. Data related to the challenges experienced by the farmers in the adoption of sustainable farming practices in paddy cultivation were collected from 120 respondents by adopting a well-structured and pre-tested interview schedule and the collected data were analyzed with suitable statistical tools like mean and percentage analysis. From the study it was found out that paddy farmers are experiencing physical constraints, communication constraints, personal constraints, socio-economic constraints and technological constraints. Addressing these issues can enhance the adoption of sustainable farming practices in paddy cultivation.

**Key words:** Sustainable farming, Challenges, Paddy cultivation

Sustainable farming techniques refer to an ecological production management system that promotes and enhances ecosystems, biodiversity, biological cycles and social-economic status of the farmers. "It is based on the minimal use of off-farm inputs and management practices that restore, maintain and enhance ecological harmony" (Vandermeer *et al.* 1998, Xu *et al.* 2000). Sustainable agriculture aims to develop farming systems that conserve the natural resource base, protect the environment, and enhance health and safety, and to do so over the long-term and livestock production can enable us to achieve sustainable agricultural development. The tribal people who are out of the reach of the 'extension system' are successfully practicing the sustainable farming practices involving organic agriculture. This approach involves cultural and management practices such as crop rotation,

recycling of animal manures, and conservation tillage to control soil erosion and nutrient losses and to maintain or enhance soil productivity (Kanagasabapathi and Sakthivel 2017).

The main reason for the focus on low- input farming systems is that most high input systems, sooner or later, would probably fail because they are not either economically or environmentally sustainable over the long-term. The concept of sustainable development therefore, helps us to understand our limitations in the world we live in. It helps us realize that we cannot establish our authority on the earth and its resources. Also, we should not exploit or overuse them in a way that they affect the need of generations to come, a hundred or thousand years later.

Paddy (*Oryza sativa* L.) an important cereal crop in the world, provides a staple food for more than one-third of the global population. In India, paddy is cultivated in an area of 43.79 million hectares producing 116.42 million tonnes with a productivity of 2659 kg/ha and in Tamil Nadu, paddy is cultivated in an area of 1.72 million hectares producing 6.45 million tonnes with a productivity of 3748 kg/ka

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(Agricultural Statistics at a glance, 2019). Some says that the word 'paddy'(rice) is derived from the Tamil word 'arisi'. Tamil Nadu is one of the popular paddy growing states in India and it has been cultivating paddy from time immemorial as this State is endowed with all favorable climatic conditions suitable for paddy growing. The researchers and policy makers are insisting on employing sustainable farming practices in paddy cultivation. However, the paddy farmers are encountering certain constraints in the adoption of farming practices. In this study an attempt is made to analyze the constraints faced by the paddy farmers in the adoption of the sustainable farming practices in Kanyakumari district, one of the pre-dominant paddy cultivating districts of Tamil Nadu State.

## MATERIALS AND METHODS

The present study was conducted in Rajakkamangalam block of Kanyakumari district. Proportionate random sampling procedure was adopted to select 120 respondents from six selected villages namely Neendakarai-B, Neendakarai-A, Vembanoor, Mathusoothanapuram, Nagercoil and Dharmapuram. Challenges experienced by the farmers in the adoption of sustainable farming practices in paddy cultivation were studied. The data were collected by adopting a well-structured and pre-tested interview schedule and the collected data were analyzed with standard statistical tools like mean and percentage analysis.

## RESULTS AND DISCUSSION

### *Challenges faced by the farmers in the adoption of sustainable farming practices in paddy cultivation*

In accordance with the objective, the challenges experienced by the respondents of the study area were collected and tabulated under five heads namely, (a) physical constraints, (b) communication constraints, (c) personal constraints, (d) socio-economic constraints, and (e) technological constraints. The results are furnished in (Table 1).

### *Physical constraints*

Regarding the physical constrains, labour scarcity (94.00 per cent) was the primary constraint expressed by most of the respondents and ranked first followed by non-availability of inputs (86.00 per cent) poor quality of inputs (78.00 per cent) and lack of advanced planning about the purchase and application of inputs (72.00 per cent).

Agriculture labour being seasonal, there is a shortage of labourers during peak season. The migration of the labour from agriculture to other occupations and to other sectors has also contributed the labour problem. Hence, majority of the respondents have reported this as the most serious constraint.

### *Communication constraints*

Lack of training (92.00 per cent) was the most seriously felt communication constraint expressed by majority of respondents followed by inability to attend training programmes (89.00 per cent), lack of sufficient information

from extension workers (87.00 per cent), weak extension service (82.00 per cent) and details given by change agents could not be understood (63.00 per cent). Lack of training was the most important communication constraint. Trainings to farming community purely on sustainable farming practices in paddy cultivation were limited. Only few training programmes were conducted by state department of agriculture in the respective villages, majority of the programmes were held at distance places and also involvement in field operations due to lack of labour, coincidence of training during peak seasons etc., had made it difficult for majority of the respondents to attend the training programmes.

Table 1 Distribution of respondents according to the constraints reported in the adoption of sustainable farming practices in paddy cultivation (n=120)

Constraints	Per cent	Rank
Physical constraints		
Labour scarcity	94.00	I
Non- availability of inputs	86.00	II
Poor quality of inputs	78.00	III
Lack of advanced planning about the purchase and application of inputs	72.00	IV
Mean percentage	82.50	
Communication constraints		
Lack of training	92.00	I
Inability to attend training programmes	89.00	II
Lack of sufficient information from extension workers	87.00	III
Weak extension service	82.00	IV
Details given by change agents could not be understood	63.00	V
Mean percentage	82.60	
Personal constraints		
Lack of knowledge to identify bio-agents	91.00	I
Not convinced with certain practices	89.00	II
Lack of knowledge to identify pests & diseases	74.00	III
Difficulty in using organic manure	72.00	IV
Mean percentage	81.50	
Socio-economic constraints		
Lack of credit facilities	93.00	I
High cost of labour	91.00	II
High rate of interest for loan	86.00	III
High cost of inputs	82.00	IV
Mean percentage	88.00	
Technological constraints		
Lack of technical guidance	85.00	I
Difficulty in using botanical pesticides	68.00	II
Difficulty in maintaining pheromone and light traps for controlling pests.	45.00	III
Mean percentage	66.00	

Lack of sufficient information from extension workers was the next important communication constraint. Few of the respondents expressed that they did not come across any extension worker from the government

development department. Some of the paddy cultivators had occasions to meet the extension personnel of agricultural department in their office rarely. Lack of adequate extension workers and their occasional visits to the villages would have made the respondents to report this as one of the major constraints.

#### *Personal constraints*

Lack of knowledge to identify the bio-agents used for controlling pests (91.00 per cent) was the foremost personal constraint expressed by majority of the farmers followed by 'not convinced with the practice' (89.00 per cent) and 'lack of knowledge to identify the pests and diseases' (74.00 per cent). Majority of the respondents had lack of knowledge on the bio-control agents and no proper orientation by way of training has been given for their benefit. Sustainable agriculture depends more on the locally available practices with the use of locally and freely available raw materials and inputs. Sustainable farming approaches took greater gestation periods and with hidden benefits. So, the yield of paddy may reduce and it takes more time for economic returns to them. So, they are not convinced about the sustainable farming practices. This might be the reason for the lack of conviction about the sustainable farming practices. Sustainable farming inputs like organic manure, green manure, green leaf manures required in large quantities, when compared to chemical fertilizer create the problem of difficulty in using organic manure by the trained paddy farmers.

#### *Socio-economic constraints*

Lack of credit facilities (93.00 per cent) was the major socio-economic constraint followed by high cost of labour (91.00 per cent). High rate of interest for loan (86.00 per cent) and high cost of inputs (82.00 per cent) were felt as the other socio-economic constraints by the respondents. Most

of the paddy farmers who are in need money for paddy cultivation, obtained the money from moneylenders and from big farmers only. Absence of adequate institutions like agricultural banks, co-operative society etc., and rigid rules and regulations might be the reason why farmers could not get money when needed. Labour scarcity was a very serious constraint in the locale particularly during agricultural operations like transplanting, weeding and harvesting. The farmers therefore have to hire labourers at any cost demanded by them, which often matches those wages provided in the secondary and tertiary sectors. This may be the reason for the high cost of labour being felt as the major socio-economic constraints.

#### *Technological constraints*

Lack of technical guidance (85.00 per cent), difficulty in using botanical pesticides (68.00 per cent) and difficulty in maintaining traps (45.00 per cent) were the major technological constraints expressed by majority of the farmers. Inadequate visits by the extension workers might have been the reason for lack of technical guidance. The farmers have developed some wrong notions about bio-agents and their effectiveness when compared to chemical control methods. Further, sustainable farming technologies get manifested only after 3-4 years of farming. Hence, majority felt that it is very difficult to use in practical.

The entire world is engaged in research for sustaining the agricultural production. More than one third of the world population has paddy as its staple food. Organic farming practices in paddy cultivation can serve a lot in sustaining and enhancing the paddy production. It is high time to suggest ways for overcoming the obstacles that hinder the adoption of sustainable farming practices in paddy cultivation. If the above listed challenges are well addressed the dire-straits of the farmers can be changed.

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