



Study on Constraints faced by Farmers in Adoption of Green Technologies in Rice Based Ecosystem

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ABSTRACT

The current study was carried out in Madurai and Trichy districts of Tamil Nadu. Two blocks from each district were chosen. The various constraints faced by farmers in adoption of green technologies in rice based ecosystem was measured by using Garret ranking technique. For this study, a total sample size of 240 people was used. It was observed that labour scarcity was ranked as first followed by poor quality of inputs as second and lack of advanced planning about the purchase and application of manures and fertilizers as third. Farmers had lack of knowledge in identifying pests and diseases and applied extra doses of fertilizers which inturn cause harm to themselves as well as to the crops.

Key Words: Constraints, Eco System, Green technologies, Rice.

INTRODUCTION

India is an agricultural nation since almost 70% of its people make their living from farming, which is also their primary form of employment. To fetch better productivity farmers were adopting new innovative technologies. One among the technologies being adopted by the farmers is Green technology. Green technology specifically involves the use of science and technology to decrease the human impacts on the environment. It includes research in agriculture, hydrology, atmospheric science and other fields. Green technology aims to preserve Earth's natural resources, mend environmental harm from the past, and safeguard the environment. The term "green technology" refers to a wide range of environmental restoration techniques. There are numerous initiatives to address regional environmental risks, even though climate change and carbon emissions are currently regarded as two of the most important global challenges. This green technology could be adopted in agriculture for the efficient use of natural resources. In India rice is a major food crop. It requires many critical inputs and resources. The constraints may be

defined as the limiting factors that obstruct an individual or item to reach its full capacity. These are the hindrances one encounter in the path of development.

Rice crop is also a potential source of pollution and also affected by many pests and diseases. Utilizing environment friendly management techniques may help to prevent environmental pollution and boost rice output. Hence, the farmers were interested to adopt the green technologies in rice based ecosystem. The present study deals with the constraints faced by the farmers in adopting green technologies in rice based cropping system.

MATERIALS AND METHODS

Constraints faced by farmers in adoption of green technologies in rice based ecosystem was measured by using Garret ranking technique. In Garret ranking technique, the rank given for the constraints by the farmers were converted into per cent position by using the formula,

$$\text{Percent position} = 100 \times \frac{(R_{ij} - 0.50)}{N_j}$$

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Table 1. Constraints faced by farmers in adoption of green technologies in Trichy and Madurai district. (n=240)

Sr. No	Constraints	Garrett Score	Rank
I	Physical constraints		
1	Labour scarcity	69	I
2	Poor quality of inputs	50	II
3	Lack of advanced planning about the purchase and application	30	III
II	Communication constraints		
1	Lack of training s	75	I
2	Inability to attend training programmes	60	II
3	Lack of information from change agent s	50	V
4	Weak extension services	39	IV
5	Details given by change agents could not be understood	24	V
III	Personal constraints		
1	Lack of knowledge to identify bio -agents	72	I
2	Not convinced with the practice	56	II
3	Lack of knowledge to identify pest and disease	43	III
4	Difficulty in using organic manure	27	IV
IV	Socio-economic constraints		
1	Lack of credit facilities	72	I
2	High cost of labour	56	II
3	High rate of interest	43	III
4	High cost of inputs	27	IV
V	Technological constraints		
1	Lack of technological guidance	72	I
2	Difficulty in using botanical pesticides	56	II
3	Complexity of tools and techniques	43	III
4	Difficulty in maintenance of manures and mixtures	27	IV

Where,

R_{ij} = Ranking given to the i^{th} attribute by the j^{th} individual A

N_j = Number of attributes ranked by the j^{th} individual

Then the Garret score was found based on the calculated value from the Garret ranking conversion table. The Garret score was multiplied

with the ranks (number of responses) by the farmers for each factor. The average of the each factor was taken and ranking of constraint was done.

RESULTS AND DISCUSSION

The constraints faced by farmers in adoption of green technologies in Trichy and Madurai district were analysed and presented in Table 1.

Physical constraints

It could be observed that labour scarcity was ranked as first followed by poor quality of inputs as second and lack of advanced planning about the purchase and application of manures and fertilizers as third. Labour scarcity was one of the major problem, as the preparations of these bio manures and bio fertilizers were found to be labour consumption process. Majority of the people migrate to other cities in the need of higher education due to which there is less chance to engage the family in this process. Other wage earner labourers were also not engaged in agriculture nowadays and they have employed themselves in MGNREGA schemes, due to which there is labour scarcity.

Communication constraints

It could be inferred that lack of training ranked as first among the five constraints. Inability to attend training programmes ranked as second followed by lack of information from change agent, weak extension services as fourth and details given by change agents could not be understood as fifth. Training conducted by the extension personnel and department officials were off campus mode normally at the offices. Villages which are little bit far away located from the KVKs and departments, the farmers from that villages faced difficulty in attending the programmes. Sometimes, they were also not able to attend the training if they had their personal work. Farmers must be motivated to participate in various training programmes organized at grassroot level for acquiring the knowledge on green technologies. There is a communication gap between the farmers and change agent. The change agents visit the villages at their scheduled time, by the time they reached, farmers adopted other management practice for their crop. Frequent visits would help the farmers to build a rapport among the change agents.

Personal constraints

It was evident that lack of knowledge to identify to identify bio-agents ranked as first followed by not convinced with the practice as second, lack of knowledge to identify pests and

disease as third and difficulty in using organic manure ranked fourth in personal constraints. Proper awareness must be given by the officials in identifying the bio-agents would lead to avoid the destruction of predators in their field. As reported by Mishra (2013) farmers had lack of knowledge in identifying pests and diseases and applied extra doses of fertilizers which in turn cause harm to themselves as well as to the crops. Mostly, the farmers who were not adopting the green technologies reported that they were not convinced the green technology practices as it they couldn't obtain the yield compared to the chemical fertilizers. The reason might be that they lack proper technical knowledge about eco-friendly agricultural practices. The findings are in accordance with Mishra (2013).

Socio-economic constraints

It is ostensible that lack of credit facilities ranked as first followed by high cost of labour as second, high rate of interest as third and high cost of inputs as fourth in socio-economic constraints. There was no separate financial Government support exclusively for adoption of green technologies, due to which farmers faced lack of credit facility as the constraint High cost of labour was the main constraint which can be addressed by possible social capital building and policy formulations. The findings are in line with Muralikrishnan *et al* (2015)

Technological constraints

From the data (Table 1), it was revealed that lack of technical guidance ranked as first, difficulty in using botanical pesticides as second followed by complexity of tools and techniques as third and difficulty in maintenance of manures and mixtures as fourth. The manures and mixtures used for green technology needs special care as it tend get rot soon. Complexity of tools and techniques like maintenance of traps ranked as second most constraint. To address this constraint establishment of impact training in green technology agricultural practices and handling the tools could improve the farmers knowledge on it. The findings of the study is in contrast to findings of Muralikrishnan *et al* (2015)

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CONCLUSION

The complexity of utilizing the technology would reduce its appeal and purpose and may decline over a shorter period. The information access to the technology needs improvement and the technologies could be reinvented into a more simplified approach, evading complexity in all the farm visits and trainings. Regarding the price fixation, minimum support price must be provided to farmers and encouraged to go for branding and labelling of products. It may enable them to demand better price from the market forces and improves the chance of better returns for the farmers. Utilizing the positive environment prevailing regarding preference of urban population towards sustainable products, better

price should be ensured by channelling the market demand in right direction. This will in turn, encourage more and more farmers to utilize green technologies in their farms gradually.

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