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Sowmya TM
Assistant Professor, UAS, Raichur,
Karnataka, India

Shashikala Ruli
Assistant Professor, UHS,
Bagalkot, Karnataka, India

Mallika Meti
Assistant Professor, UAS, Raichur,
Karnataka, India

Farmers' behavioural transformation in sustainable organic farming transitions

Sowmya TM, Shashikala Ruli and Mallika Meti

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Abstract

The study evaluates the degree of adoption of organic practices, dimension-wise behavioural predictors, and overall behavioural change for farmers moving from conventional to organic farming under irrigated and rainfed conditions. Analysis of data from 180 transition farmers indicates moderately to highly positive adoption of organic practices, especially with respect to nutrient and crop management. The behavioural change was most significantly impacted by attitude, social influence, self-confidence, management skills, and control. Farmers under rainfed conditions had significantly greater positive behavioural change than farmers under irrigated conditions. The results underscore the need for institutional support, positive attitude towards the environment, health and economics, and need targeted training to ramp up transitions to organic farming.

Keywords: Organic farming, behavioural change, adoption, attitude, social influence, transition farmers

1. Introduction

The ever-growing organic farming practice is being presented as a viable and sustainable alternative to the conventional agricultural practice mainly because of its potential to boost soil health, environment, and human health while also being resilient to changes in climate and the likes. The world's interest in organic production and its enabling technologies have been uplifted by the severe problems in the agricultural land such as deterioration, loss of soil fertility, climatic irregularities, and the use of harmful chemicals in conventional agriculture. Besides the environmental benefits, the organic method of farming comes with lower input needs, better ecosystem services, and the new market opportunities that are being created as a result of the increasing consumer demand for safe and sustainably produced food.

The organic farming movement, on the other hand, is a difficult and slow process that can take years to show results and is not only the application of alternative production practices to be considered. It would require comprehensive shifts in the behavior of farmers and these changes would depend on farmers' knowledge, their attitudes, social influence, self-esteem, management skills, and perception of control over resources and risks. The decision of farmers to go organic is often determined by their views on the financial aspect of the decision, environmental care, health issues, support from institutions, and interpersonal networks making behavioural factors play a central role in the transitions to sustainability in agriculture.

It is through the understanding of farmers' behaviours that effective extension strategies, capacity-building programs, and policy support for the farmers during the transition period will be able to be unfolded. A behavioural approach can help policymakers and extension workers move away from their traditional technology-centric view and allow them to uncover the motivations and constraints that shape farmers' adoption behavior. In such circumstances, it would be sound to conduct an analysis of the changing behaviours of farmers who are switching to organic farming under different.

2. Materials and Methods

The research was performed with 180 organic transition farmers (90 using irrigation and 90 rainfed). The data gathering was done through a structured interviewing process that included different aspects of organic practice adoption, behavioural dimensions (like knowledge, attitude,

Corresponding Author:
Sowmya TM
Assistant Professor, UAS, Raichur,
Karnataka, India

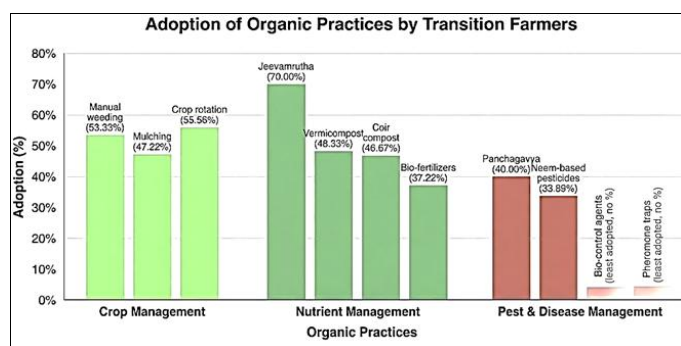
social influence, self-confidence, management skills, and control factors), and overall behavioural change. The statistical methods of descriptive statistics, t-test, and correlation analysis were applied.

3. Results and Discussion

3.1 Extent of Adoption of Organic Practices by Transition Farmers

The organic practices adoption was different depending on the crop management, nutrient management, and pest and disease management. A very intensive weed control during the transition period was indicated by the wide adoption of manual weeding (53.33%) and mulching (47.22%) as the main crop management practices. The practice of Crop rotation at least once a season (55.56%) was very common and this showed that farmers knew about the soil fertility and pest management advantages of crop rotation.

In the case of nutrient management, the use of Jeevamrutha (70.00%), vermicompost (48.33%), coir compost (46.67%), and bio-fertilizers (37.22%) more than once a season denoted strong reliance on locally available organic inputs. The adoption of sheep penning and biogas slurry was very rare due to resource and logistical constraints.



Panchagavya (40.00%) and neem-based pesticides (33.89%) were the most preferred methods for pest and disease management, while biocontrol agents and pheromone traps were least preferred due to insufficient technical knowledge.

The adoption of organic practices during the transition was mostly due to farmers' familiarity with the method, availability of labour, and access to local resources. Manual weeding, crop rotation, and the use of indigenous nutrients like Jeevamrutha and vermicompost were the main practices for soil fertility and weed management. The limited adoption of biocontrol agents and pheromone traps indicates a lack of technical knowledge and resources thus the need for targeted extension support during transitions to organic farming becomes more pronounced.

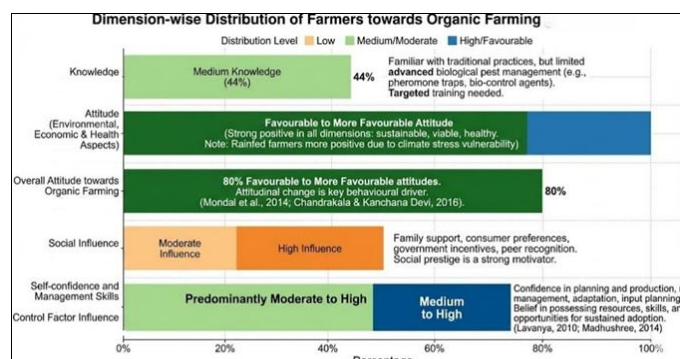
3.2 Dimension-wise Distribution of Farmers towards Organic Farming

3.2.1 Knowledge

Farmers having medium knowledge about organic farming almost 44 percent, this meant they were acquainted with the old practices and had little knowledge of the advanced biological pest management. The lack of knowledge about pheromone traps and bio-control agents indicates the need for special training programs to be conducted.

3.2.2 Attitude (Environmental, Economic and Health Aspects)

There was seen a favourable to a more favourable attitude across the three aspects of environmental, economic and health. Farmers considered organic farming as the environment's friend; moreover, it would help them to make money by less expenses and getting price premiums, plus protecting their health. Rainfed farmers were the ones who showed the strongest positive attitudes, which might be connected with their being more prone to stress because of the changing climate when practicing conventional farming methods.



3.2.3 Overall Attitude towards Organic Farming

On the whole, around 80 percent of the farmers had positive to very positive attitudes, corroborating the fact that attitudinal changes are necessary for the changes to happen on the behavioural level.

3.2.4 Social Influence

Among the farmers the presence of moderate to substantial social influence due to the support of the family, the demand on the market, the government's subsidies, and the recognition from peers. Social prestige that comes with organic farming was essentially the driving force.

3.2.5 Self-confidence and Management Skills

The majority of the farmers indicated self-confidence and management skills at the medium to high level, particularly in the areas of planning and production. Risk management, situation adaptation, and organic input planning were identified as major drivers of the above-mentioned behavioural change.

3.2.6 Control Factor Influence

Farmers' perception of their control over the situation was mostly moderate to high. That is, they believed that they had the resources, skills, and opportunities for organic farming, and thus this perception supported the adoption of that behavior in the long term.

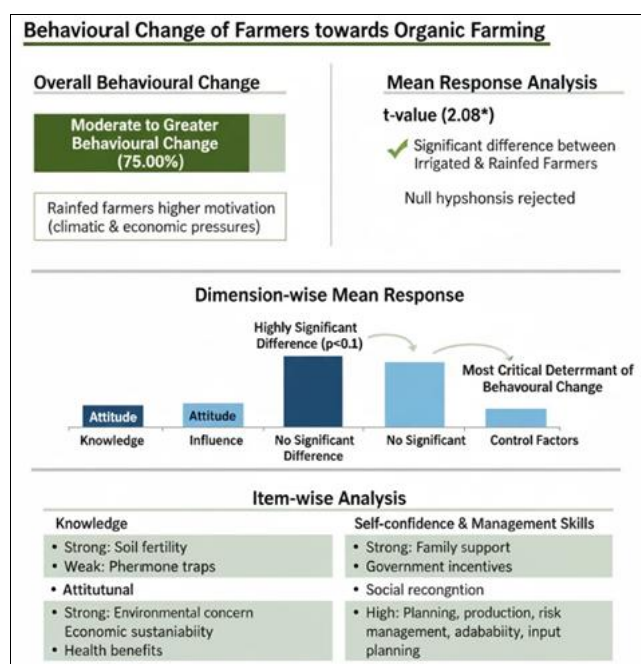
The results indicate that farmers' attitudes were the major contributors to the change in the practices of organic farming, even though they had a moderate level of knowledge about it and especially poor understanding of biological pest control. Support from the community, self-assurance, and good management skills were also the factors that made the farmers' motivation stronger for converting to organics. The fact that they saw themselves as being in control of their actions even during transition was a key factor in farmers' maintaining adoption. It was possible to conclude from these findings that the attitudinal and psychosocial factors had a greater impact on the transitions into organic farming than technical knowledge.

3.3 Behavioural Change of Farmers towards Organic

Farming

3.3.1 Overall Behavioural Change

A large part of the farmers (75.00%) showed changes in their behaviour which were moderate to more aggressive in the direction of the organic farming. Rainfed farmers indicated an average mean behavioural change score that was significantly higher in contrast with the irrigated farmers, which was a reflection of a stronger motivation that was running by the combination of climate and economic pressures.



3.3.2 Mean Response Analysis

The outstanding t-value (2.08*) compels one to recognize the existence of a statistically significant difference between the behavioural changes of the irrigated and rainfed farmers, thus, leading to the rejection of the null hypothesis.

3.3.3 Dimension-wise Mean Response

Between the irrigated and rainfed farmers, attitude was among the behavioural dimensions that showed a highly significant difference ($p < 0.01$), while the differences in knowledge, social influence, and control factors were not significant. This highlights the attitude as the most important factor in bringing about the change in behaviour.

3.3.4 Item-wise Analysis

The analysis by items showed that the farmers had good knowledge about soil fertility management but poor understanding of the use of pheromone traps. The attitudinal items showed that the farmers were very concerned about environmental conservation, economic sustainability, and health benefits. The social influence items indicated family support, government incentives, and social recognition. The high self-confidence and management skills also contributed to the organic farming behaviour.

The results show that there has been a significant change in behaviour among the transition farmers, with the rainfed farmers having the greatest change in the behaviour attributed to the fact that they are more vulnerable climatically and economically under the conventional farming system. The significant difference in mean behavioural scores is a confirmation of the production environment's influence on the behavioural

responses. Attitude was the most important factor in the change of behaviour, surpassing the role of knowledge and control factors. Strong concern for environmental sustainability, economic viability, and health benefits, backed by social and institutional influences, facilitated the transition to organic farming.

4. Conclusion

The findings showed that the behavioural shift of farmers moving to organic farming got mainly through attitudinal and psychosocial factors instead of only technical knowledge, thus pointing to the necessity of the policy frameworks to include the behavioural aspects in the organic promotion strategies. The greater behavioural change in the rainfed farmers group confirms the suggestion that more attention should be given to the risk-prone Agro-ecological regions in the national organic missions. The extension methods under the PKVY and state organic missions should not only focus on input support but also apply behaviour-sensitive strategies like confidence-building, peer learning, and social recognition, which are vital in their own right. The hands-on capacity building in biological pest management, accompanied by the community-based institutional support, can greatly contribute to the effectiveness and scalability of organic farming transitions.

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