

INNOVATION - DECISION BEHAVIOUR OF TRIBAL WOMEN OF UDAIPUR DISTRICT REGARDING VERMICULTURE TECHNOLOGY

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Introduction

Dominance of chemical agriculture from last few decades has deteriorated the soil health and created problem of disposal of agricultural waste in rural areas. It is important to maintain environmental and agricultural sustainability without reducing productivity. Vermiculture technology has been considered as a sound and viable option to regenerate the soil health through recycling the agriculture waste. For the promotion of vermiculture technology in rural as well as tribal areas the Government of India and Government of Rajasthan launched different national and state level programmes. During recent past BAIF, a voluntary organization working in the tribal area of Panchayat Samiti Jhadol of Udaipur district, has encouraged tribal women to take up vermiculture technology, to boost up the crop production, regenerate soil health by using vermicompost and reduce the use of agro-chemicals and to increase income.

Innovation-decision process is essentially an information-seeking information-processing activity in which the individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation. This is a social process involving talking to others. The assessment of innovation-decision behavior provides valuable information to the researchers, extensionists and policy makers to identify reasons of low adoption of any agricultural innovation. The present study aimed to observe the innovation- decision behaviour of tribal women for vermiculture technology with following objectives:

1. To find out the innovation - decision behaviour of tribal women regarding vermiculture technology and determine rate of its adoption.
2. To find out the knowledge and attitude of tribal women regarding vermiculture technology.
3. To study the attributes of vermiculture technology as perceived by the tribal women.
4. To study the constraints faced by the tribal women in adoption of vermiculture technology and measures adopted by women to overcome them.

5. To study the association of personal, socio-economic and communication variables of tribal women with their innovation - decision behaviour.

Methodology

Locale & Sample Selection

The present study was conducted in purposively selected Panchayat Samiti, Jhadol in Udaipur district of Rajasthan. The village "GORAN" was selected purposively for the study as highest number of families have adopted the vermiculture technology. To cover entire tribal social system all the households (246) in the village were included in the study. From each household one tribal women was selected. Thus, the total sample comprised of 246 tribal women.

Development of research tool

Keeping in mind the purpose of the study, the interview schedule was prepared for collection of data from the respondents related to innovation- decision behaviour based on various stages of innovation - decision process. The adopters were categorized on the basis of their innovativeness. The procedure suggested by Rogers and Shoemaker (1995) was used to categorize the adopters. The interview schedule consisted of following sections according to specific objectives of the study.

Section I

This section of interview schedule contained the background information of the respondents (Personal, Socio-economic and Communication) and general information related to agency.

Section II

This part of the interview schedule was designed to find out the innovation- decision behaviour of the respondents regarding vermiculture technology which included knowledge test, attribute scale, attitude scale and adoption scale, constraints scale(constraints faced in adoption of vermiculture technology & measures adopted to overcome them).

Section III

This part of interview schedule was used to measure socio-economic changes experienced, and opinion and suggestions for improvement in technology for adoption.

Data were collected from the selected tribal women with the help of developed interview schedule in face to face personal in local dialect. In order to reach at appropriate conclusion, various statistical measures viz. frequency, percentage, mean, mean per cent

scores, mean weighted scores, standard deviation, rank, chi-square, t-values, r and rtt were used for this study.

Major findings

Background information of the respondents

Majority of the respondents were from middle age group (51.23%), married (99.60%), illiterate (66.29%) and farm labour (97.15%) was their main occupation. All were from schedule tribe. Majority (65.45%) had nuclear family with 5-8 members, were member of BAIF agency (78.46%) and all were from low socio-economic status. Majority of respondents possessed land up to 2.5 acre (98.38%) single room Kutcha house (100.00%), small herd size of animals (100.00%) and thatched roof-dwelling for live stocks. All the respondents possessed desi wooden plough, small hand tools and grain storage bins. The most commonly used source of information was personal cosmopolite (MWS-1.54) and least commonly used was impersonal cosmopolite (MWS 0.16). Majority of respondents (64.29%) were using the information sources to medium extent. Majority of respondents (93.09%) knew BAIF agency, working from last five years & running compost related programme in village. Agency Officials visiting them fortnightly and agency provided inputs for installation of vermi units.

Awareness-knowledge stage

Knowledge of the respondents about vermiculture technologies :

Majority of respondents (83.3%) were in good knowledge category, followed by 9.75 per cent possessed medium knowledge about vermiculture technology. The study revealed that the knowledge of respondents in concept of vermiculture technology was highest (MPS - 90.65).

Persuasion stage

Perceived attributes

The MWS of all the perceived attributes ranged between 2.19 to 2.69 (on three point continuum) which indicating the high extent of perception of vermiculture technology.

Attitude of respondent towards vermiculture technology

Majority of respondent had favourable (79.03%) to most favourable (8.73%) attitude towards vermiculture technology and none of the respondents had unfavourable or most unfavourable attitude towards the technology.

Decision stage

Decision of adoption or rejection of vermiculture technology

Table 1: Distribution of the respondents by their intended decision about vermiculture technology

N = 229

S. No.	Intended decision	Decision stage		Implementation stage	
		f	%	f	%
A)	Adoption	201	87.77	205	89.52
B)	Rejection	28	12.23	24	10.48

Data in table 1 clearly depict that initially 87.77 per cent respondents decided to adopt while 12.23 per cent decided to reject the technology but when it came to implementation stage more respondents (89.52%) implemented and only 10.48 per cent respondents rejected. The reason to change the rejection decision to adoption decision at implementation stage may be due to the effective approach of the organization and availability of personnel to guide and motivate.

Implementation stage

This stage in the innovation - decision process occurs when an individual engages in activities that lead to a choice to adopt or reject an innovation. Up to decision stage, the innovation - decision process has been strictly a mental exercise. But implementation involves overt behaviour change, as an individual puts an innovation into use. It is often one thing for an individual to decide to adopt a new idea, but quite a different thing to put the innovation into use. Adoption is a decision to make full use of an innovation and rejection is a decision not to adopt an innovation.

Constraints faced in adoption of vermiculture technology

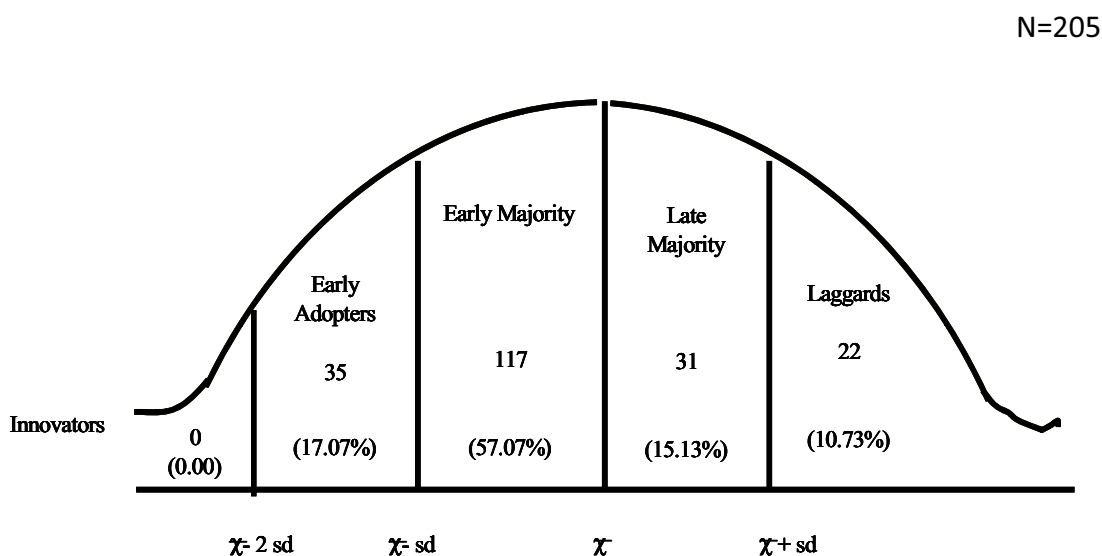
The main constraints reported by nearly all the respondents was marketing followed by production with the mean weighted scores 1.43 and 1.11 respectively. The main suggestion given by the respondents (85.58%) suggested that market should be developed for selling of earthworm and vermicompost followed by 72.48 per cent reported for the awareness indirect benefits and use of technology.

Innovation-decision behaviour of respondents:

Adopter’s categorization:

In adoption categories, majority of the respondents were in the category of early majority(57.07%) by their innovativeness and none of the respondents were innovator.

Fig.1 : Distribution of respondents in adopter categories by their innovativeness



Rate of adoption:

Rate of adoption is the relative speed with which an innovation is adopted by members of a social system. When the number of individuals adopting a new idea is plotted on cumulative frequency basis over time, the resulting distribution is “S” shaped diffusion curve.

“s” Shaped diffusion curve

Here an effort was made to plot the rate of awareness - knowledge, rate of adoption, innovation - decision period, rate of discontinuance and rate of rejection. The Figure 2 shows the diffusion pattern of vermiculture technology in “S” shape, with diffusion occurring slowly at first (yellow), increasing sharply during the “take off” (green), and flattening out (red) gradually as the adoption rate rise. It is clear from the figure that there was an initial period, a period of introduction of vermiculture technology with a relatively slow adoption rate while high rate of adoption in “take off” period when the vermiculture technology penetrated in the tribal social system to a large extent in short period of time. During the initial and “take off” period, the marginal rate of diffusion led to convex curve. The “take off” period is followed by a period of saturation where again diffusion rate was slow as the marginal diffusion declines, and the diffusion reaches a peak (Fig 2).

Rate of awareness-knowledge & Rate of adoption

The rate of awareness-knowledge and rate of adoption clearly reveals that in the beginning, few respondents had awareness- knowledge and adoption. But after that there was upward movement and the curve started climbing sharply as more and more individual of social system had awareness-knowledge and adoption of the technology. After rising, the curve began to leveling with few individuals of the system had awareness-knowledge and adoption of the vermiculture technology.

Innovation- decision period

The whole process took around five years time and the actual innovation- decision period for the vermiculture technology is depicted by filled area or shaded area between the rate of awareness-knowledge and rate of adoption. There was a great variation in the innovation - decision period through out the adoption process. In the beginning, period was shortest (Dec.,1997-Feb.,1998) then increased (March 1998 –Oct., 1998), decreased during (Oct., 1998 – Jan.,1999), again increased during (Jan.,1999 – Aug., 1999) and so on. This variation in the innovation- decision period was due to the agency’s incentives which fluctuated from time to time due to their policy change, that is, in the beginning more incentives were given and then incentives were reduced. After seeing the reaction of respondents towards adoption and discontinuous of the technology, the agency reviewed the programme and increased the incentives little bit, which led to the fluctuation in innovation- decision period.

Rate of discontinuance

In case of vermiculture technology the discontinuation also started simultaneously after a period of $1\frac{1}{2}$ year, as by that time other members of the social system were acquiring awareness-knowledge as well as adopting the technology. From the adopters

many started to discontinue the technology one by one and quite a good number of respondents discontinued the technology use while others were still adopting.

Rate of rejection

There were few individuals in the social system who were undecided about the adoption of technology and took long time period between the awareness-knowledge to finally reject the technology. All the rejecters took the decision of rejection, approximately in 3 years time (March 1998 to Jan 2001) as depicted in figure 2.

Confirmation Stage

At the confirmation stage, the individual seeks reinforcement of the innovation - decision already made or reverses a previous decision to adopt or reject the innovation if exposed to conflicting messages about the innovation. The innovation - decision process can just as logically lead to rejection decision as to adoption decision. In fact, each stage in the innovation - decision process is a potential rejection point. For instance, it is possible to reject an innovation at the knowledge stage by simply forgetting about it after gaining initial awareness - knowledge. And, of course, rejection can occur even after a prior decision to adopt. This is discontinuance, which usually, occurs at the confirmation stage of innovation - decision process. (Rogers,1995).

Table 2: Distribution of respondents by their confirmed decision towards vermiculture technology

N = 246

S. No.	Confirmed decision	f	%
1.	Does not know	17	6.91
2.	Rejection	24	9.76
3.	Discontinuance	152	61.79
4.	Confirmed Adoption	53	21.54

Regarding innovation - decision behaviour of the tribal women, 6.91 per cent respondents were unknown about the technology and 9.76 per cent were rejecters, while 61.79 per cent were discontinuers and 21.54 per cent were confirmed adopters.

Extent of adoption of vermiculture technology by the respondents

In view of continued adoption of vermiculture technology by 53 respondents, an effort was made to study the extent of adoption among these respondents. The adoption index for different components of vermiculture technology was calculated on the basis of extent of use and time since they were using it. Majority of respondents (79.25%) had high adoption level regarding vermiculture technology while 20.75 per cent had medium adoption and none of the respondents were in the category of low adoption level.

Innovation - Decisions Behaviour of the respondents achieved by following Innovation – Decisions Process

Innovation decision behaviour of respondents towards vermiculture technology in tribal social system illustrates in the fig... Innovation – decision behaviour of women regarding vermiculture technology in a tribal social system was studied in the village “Goran” where the technology was disseminated by a voluntary organization (BAIF). Out of total 246 respondents, 17 respondents had no awareness about the technology. Rest two hundred twenty nine respondents expressed awareness – knowledge behaviour and persuasion behaviour. At decision stage 201 respondents decided for adoption & 28 for rejection of the technology. But 205 respondents entered into implementation stage by adopting once the vermiculture technology while only 53 respondents completed the full innovation decision process by confirming their decision .

Fig 3 further shows the individual path of respondent’s decision to adoption , rejection and discontinuance out of total 246 respondents, 17 not even heard name of the technology. 26 respondents first tried the technology out of these 17 completed the full process and were still adopted the technology and 9 discontinued it after a use for a certain period. Those who decided to go directly for adoption (175 respondents) 32 respondents still continued the practice, 2 respondents once adopted the technologies discontinued after some period again adopted later on looking to its benefits and still continued, a big number 139 respondents adopted and all of them discontinued because of some or the other reason, the rest of two respondent after adoption they discontinued, again adopted later on and discontinued, again adopted later on and discontinued the

vermiculture technology. Regarding discontinuance of the technology total 152 respondent discontinued this after adoption. Out of this 141 came for direct adoption, 1 came from rejection to later adoption, 9 came from trial. Out of total sample 8 later adoption took place these were 4 from rejecters and 4 from adopters category. Total 28 respondents rejected the technology at decision stage but 4 respondents later on adopted the vermi technology, while 24 respondents rejected the technology till confirmation stage. This Discontinuance 100 per cent was disenchantment none of them was in the category of replacement discontinuance. Regarding rejection out of the 28 respondents 4 were active rejection and 24 were passive rejection.

Association of personal, socio-economic and communication variable with their innovation - decision behaviour

The variables age, education, family type, organizational membership, media ownership, transport, knowledge, attitude, constraints and socio-economic changes were highly associated with the innovation - decision behaviour of tribal women while attribute was associated at 5 per cent level of significance. While variables family size, information sources & electricity were not found associated with the innovation -decision behaviour of tribal women with respect to vermiculture technology.

Socio-economic changes experienced

Majority of respondents (12.68 – 57.56%) experienced all the social changes either to great or some extent. Regarding economic changes were experienced to nil extent by 4.39 – 65.36 per cent respondents. Regarding opinion more than half of respondents (35.46%) perceived it as very useful.

Opinion and suggestion for further improvement in the technology for adoption

Majority of respondents perceived this technology useful & very useful overall, the technology was reported very useful by the respondents but it was discontinued by majority of respondents because of the marketing constraint. With the support of marketing and developing knowledge among respondents about indirect benefits of technology on their own farms can help in readoption of the technology by the respondents.

Conclusion

Majority of the respondents possessed good knowledge regarding vermiculture technology in total and componentwise. All the attributes of vermiculture technology were

perceived to high extent by the respondents with MWSs 2.19 - 2.69. Majority of respondents had favourable to most favourable attitude towards the vermiculture technology. At decision stage initially 87.77 per cent respondents decided to adopt but when came to implementation stage 89.52 per cent respondents adopted the technology. Majority of respondents who were using the technology, adopted it to a high extent with MPS 76.19. and adoption index ranged from 68.55 – 88.05. Major constraints experienced by majority of respondents in adoption of vermiculture technology were marketing followed by production constraints. Regarding innovation - decision behaviour, 6.91 per cent respondents were unknown, 9.76 per cent were rejecters, 61.79 per cent were discontinuers and 21.54 per cent were confirmed adopters. Regarding association of personal, socio-economic and communication variables, all the variables age, education, family type, organizational membership, media ownership, transport, knowledge, attributes, attitudes, constraints and socio-economic changes were found to be associated with the innovation - decision behaviour of tribal women except family size, information sources & electricity.

References

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