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Post-adoption behaviour of farmers towards soil and water conservation technologies of watershed management in India

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Abstract

The Indian Institute of Soil and Water Conservation (IISWC) and its Research Centres have developed many successful model watershed projects in India in the past and implemented many Soil and Water Conservation (SWC) technologies for sustainable watershed management. While many evaluation studies were conducted on these projects in the past, there has been no assessment of the post-adoption status of the SWC technologies over a longer period. It was imperative to appraise the behaviour of the farmers with regard to the continuance or discontinuance of the technologies adopted, diffusion or infusion that took place and technological gaps that occurred in due course of time in the post watershed programme. Therefore, it was realized that the post-adoption behaviour of beneficiary farmers who have adopted different soil and water conservation technologies for watershed management projects should be studied in detail. The research study was initiated in 2012 as a core project at Vasad as the lead Centre along with IISWC headquarter Dehradun, and Centres Agra, Bellary, Chandigarh, Datia, Kota & Ooty, with the specific objectives of the study to measure the extent of post-adoption behaviour (continued-adoption, discontinuance, technological gap, diffusion and infusion) of farmers towards the adopted SWC technologies of watershed management. In the present study various indices regarding continued adoption, dis-adoption (discontinuance), technological gap, diffusion, infusion regarding soil and water conservation technologies for watershed management were developed for measurement of post-adoption behaviour of farmers. It was revealed that a little less than three-fourth (73%) of SWC technologies continued to be adopted and more than one-fourth (27%) were discontinued by farmers. Out of the total continue adopted SWC technologies by farmers, a little less than one-fifth (19%) of technologies continued to be adopted with a technological gap. More than one-fourth (28%) of SWC technologies were also diffused to other farmers' fields in nearby villages and on an average 1.2 technologies were also infused into the farmers' fields from outside by their own efforts in the watersheds developed by the IISWC and its Centres.

Key words: Post-adoption; Soil and water conservation; Watershed Management

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1. Introduction

Post-adoption behaviour is a decision of a farmer regarding whether to continue with an adopted technology with or without a technological gap or discontinue for adoption of another new technology or his unwillingness to continue with adopted technology.

When the farmers are satisfied with whatever new technology they have adopted, they are likely to hold on to it, but if they feel that it does not meet their needs they will discard it (Rogers, 1995). But, in the present times, there are so many other factors, apart from meeting of needs, which push a farmer to discard a technology. Van Tongeren (2003) investigated the discontinuance of farming innovations and found that the end of subsidies and educational programming explained the majority of discontinuances. It is believed that an effective way to increase productivity is broad-based adoption of new farming technologies (Minten & Barrett, 2008). Adoption of improved technologies will not improve food security and reduce poverty if barriers to their continued use are not overcome (Oladele, 2005). Discontinuance is a decision to reject an innovation after it has previously been adopted (Rogers, 2003), Rogers reported two types of technology discontinuance (1) replacement discontinuance is a decision to reject an idea in order to adopt a better idea that supersedes it and (2) disenchantment discontinuance is a decision to reject an idea as a result of dissatisfaction with its performance. He also defined diffusion as the process by which an innovation spreads within a social system is called *diffusion*. Spread of some new product, idea, or behaviour over time through a social system.

Leuthold (1967) concluded from his study of a state wide sample of Wisconsin farmers that the rate of discontinuance was just as important as the rate of adoption in determining the level of adoption an innovation at any particular time. In any given year, there were about as many discontinuers of an innovation as there were first-time adopters. The continued use of Soil and Water Conservation (SWC) seemed mainly determined by the actual profitability and, related to that, the labour requirements for recurrent maintenance and use. Moreover, in villages with better future prospects (where SWC was promoted within an integrated development strategy) farmers also performed better maintenance of their measures and replication rates were higher (De Graaff et al., 2008). If many farmers in a specific project area or village adopt a certain measure, farmers in neighbouring villages may also adopt the measures without project assistance (spontaneous diffusion), as was experienced in Mali (Bodnar, Schrader, & van Campen, 2006).

Indian Institute of Soil and Water Conservation (IISWC) and its Centres have developed many watershed projects successfully in India in the past and implemented many SWC technologies for watershed management. Therefore, it was realized that the post-adoption behaviour of beneficiary farmers who have adopted soil and water conservation technologies for watershed management should be studied in detail regarding their present status: continue-adoption, dis-adoption, technological gap, diffusion and infusion. The major objective was to measure the extent of post-adoption behaviour (i.e. continue-adoption, dis-adoption and technological gap, diffusion and infusion) of farmers regarding adopted SWC technologies of watershed management.

2. Materials and methods

2.1. Study area

The research study was carried out during 2012–2015 in eight states of India as a core project at the Indian Institute of Soil and Water Conservation (IISWC), Research Centre, Vasad (Gujarat), as lead Centre along with IISWC headquarter Dehradun, Uttrakhand state, and its Centres viz., Agra (Uttar Pradesh), Bellary (Karnataka), Chandigarh (Haryana), Datia (Madhya Pradesh), Kota (Rajasthan) and Ooty (Tamil Nadu). The already developed watersheds by IISWC and its Centres that were at least three years old were selected for the study, 4 or 5 watersheds were selected at each Centre. A total of 38 watersheds were selected from eight research Centres of IISWC in India as given in Table 1.

2.2. Selection of respondents

The farmers of selected watersheds who have adopted soil and water conservation technologies were selected as respondents in the study. At least 50 respondents were selected from each watershed from all the existing categories of farmers in the watershed. A list of SWC technologies was prepared which were implemented during each watersheds development programme. A SWC technology-wise inventory of respondent farmers, who have adopted the technologies

Table 1
Centre-wise selected watersheds and number of respondents.

Name of Centre	Name of selected watersheds with number of respondents	Total respondents
Vasad	Navamota (50), Rebari (50), Sarnal (50), Antisar (50),Vejalpur-Rampura (50)	250
Agra	Etmatpur (50), Boman (50), Raghupur (50), Jalalpur (50)	200
Bellary	Joladarasi (50), Chinnatekur (50), PC Pyapli (54), Mallapuram (54),Chilakanahatti (58)	266
Chandigarh	Aganpur-Bhagwasi (50), Mandhala (49), Johranpur (26), Sabeelpur (50), Kajiana (50)	225
Datia	Bajni (50), Jigna (50), Kalipahari (50), Agora (50), Durgapur (50)	250
IISWC, Dehradun	Fakot (50), Raipur (50), Sabhawala (51), Langha (60)	211
Kota	Chhajawa (50), Badakhera (50), Haripura (50), Hanotiya (50), Semli Gokul(50)	250
Ooty	Salaiyur (50), Chikkahalli (50), Eramanaikkanpatti (50), Putthuvampalli (50), Thulukkamuthur (50)	250

with the help of Detail Project Report (DPR) or by organizing meetings with farmers was prepared. The inventory listed the names of farmers the size of land holding and the adopted technology. These were used to prepare inventories of farmers for all technologies adopted during the watershed development programmes. A stratified proportionate random sampling plan was adopted to select respondents from different inventories or lists of farmers. At least 50 respondents were selected from each watershed, selected from all the existing categories of farmers in the watershed. A detailed structural interview schedule was developed by the investigators and data regarding personal, psychological and post-adoption behaviour variables were recorded on a structured schedule by interviewing the respondents personally.

2.3. Categorization of respondents

The respondents were separated into three categories in relation to the data regarding the variables: continue adoption, discontinuance, technological gap and diffusion towards SWC technologies for watershed management with help of the following criteria:

	Range of score	Category
(a)	$<$ Minimum score + CI	Low
(b)	$>$ Minimum score + CI to $<$ Maximum score − CI	Moderate
(c)	$>$ Maximum score − CI	High

CI = Class Interval.

Class Interval (CI) was computed using the following formula:

$$CI = \frac{\text{maximum score} - \text{minimum score}}{\text{number of classes}}$$

2.4. Measurement of post-adoption behaviour of farmers

To measure the extent of post-adoption behaviour variables viz., continue adoption, discontinuance, technological gap, diffusion and infusion, a detailed methodology was developed such as data collection schedules, scoring procedure and data analysis with the following developed indices:

(i) Technology Continue Adoption Index (TCAI):

$$TCAI = \frac{\text{number of SWC technologies continue adopted by a farmer}}{\text{number of SWC technologies initially adopted by a farmer}} \times 100 \quad (1)$$

Overall Technology Continue Adoption Index: Watershed level

$$Overall\ TCAI = \frac{\sum_{i=1}^{N} TCAI_i}{N} \tag{2}$$

where $\sum_{i=1}^{N} TCAI_i$ is the sum total of technology continue adoption indices of ith farmers and N is the total number of farmers

(ii) Discontinuance of Technology Index (DTI):

$$DTI = \frac{\text{number of SWC technologies discontinued by a farmer}}{\text{number of SWC technologies initially adopted by a farmer}} \times 100 \tag{3}$$

Overall Discontinuance Index: (watershed level)

$$\text{Overall Discontinuance Index} = \frac{\sum_{i=1}^{N} DTI_i}{N} \tag{4}$$

where $\sum_{i=1}^{N} DTI_i$ is the sum total of discontinuance of technology indices of ith farmers and N is the total number of farmers.

(iii) Technological Gap Index (TGI):

$$TGI = \frac{\sum_{i=1}^{N} \left[\frac{R-A}{R}\right]}{N} \times 100 \tag{5}$$

where R is the maximum possible score on complete adoption of a technology as per the design suitable in the watershed (i.e. 10), A is the score obtained by a beneficiary farmers on his incomplete adoption of a technology, and N is the total number of technologies adopted.

Overall Technological Gap Index: Watershed level

$$\text{Overall Technological Gap Index} = \frac{\sum_{i=1}^{K} TGI_i}{K} \tag{6}$$

where $\Sigma_{i=1}^{K} TGI_i$ is the sum total of technological gap indices of kth farmers and K is the total number of farmers.

(iv) Technology Diffusion Index (TDI):

$$TDI = \frac{\text{number of SWC technologies diffused by a farmer}}{\text{numbers of SWC technologies initially adopted by a farmers}} \times 100 \tag{7}$$

Overall Technology Diffusion Index:

$$\text{Overall Technology Diffusion Index} = \frac{\sum_{i=1}^{N} TDI_i}{N} \tag{8}$$

where $\Sigma_{i=1}^{N} TDI_i$ is the sum total of technology diffusion indices of ith farmers and N is the total number of farmers.

3. Results and discussions

3.1. Levels of continue adoption of SWC technologies by farmers

The data in Table 2 shows the levels of continue adoption of soil and water conservation technologies by farmers in the watersheds developed by IISWC and its different Research Centres in the India. It was revealed that the majority of farmers have continued the adopted SWC technologies at a moderate level at Agra (79%) and Datia (52%) Centres, whereas the majority of farmers have continue adopted SWC technologies at low level at Vasad (65%) and Chandigarh (56%) Centres. Less than 15% of farmers have continued the adopted SWC technologies at high levels in their fields for

Table 2
Levels of continue adoption of SWC technologies by farmers in different watershed programmes implemented by IISWC and its research Centres in India.
($n=1902$).

Level of continue adoption of SWC technologies	Number of watershed farmers at different Research Centres of IISWC								Pool
	Vasad Navamota, Rebari, Sarnal, Antisar & Vejalpur Rampura ($n=250$)	**Dehradun** Fakot, Raipur, Sabhawala & Langha ($n=211$)	**Chandigarh** Aganpur Bhagwasi, Mandhala, Johranpur, Sabeelpur & Kajiyana ($n=225$)	**Bellary** Joladarasi, Chinnatekur, PC Pyapli, Mallapuram & Chilakanahatti ($n=266$)	**Kota** Chhajawa, Badakheda, Haripura, Hanotiya & Semli Gokul ($n=250$)	**Agra** Etmatpur, Boman, Raghupur, &Jalalpur ($n=200$)	**Ooty** Salaiyur, Chikkahali & Ermanaikkanpatti, Putthuvampalli& Thulukkamuthur ($n=250$)	**Datia** Bajni, Jigna, Kalipahari, Agora & Durgapur ($n=250$)	
Low	162 (64.8)	85 (40.3)	125 (55.6)	97 (36.5)	116 (46.4)	27 (13.5)	119 (47.6)	83 (33.2)	814 (42.8)
Moderate	66 (26.4)	86 (40.8)	76 (33.8)	121 (45.5)	113 (45.2)	158 (79)	101 (40.4)	130 (52)	851 (44.7)
High	22 (8.8)	40 (18.9)	24 (10.7)	48 (18.1)	21 (8.4)	15 (7.5)	30 (12)	37 (14.8)	237 (12.5)

Note: The data in parentheses are in percentage.

Table 3
Levels of discontinuance of SWC technologies by farmers in different watershed programmes implemented by IISWC and its research Centres in India.
($n=1902$).

Level of discontinuance of SWC technologies	Number of watershed farmers at different research centres of IISWC								Pool
	Vasad Navamota, Rebari, Sarnal, Antisar & Vejalpur Rampura ($n=250$) (%)	**Dehradun** Fakot, Raipur, Sabhawala & Langha ($n=211$) (%)	**Chandigarh** Aganpur Bhagwasi, Mandhala, Johranpur, Sabeelpur& Kajiyana ($n=225$) (%)	**Bellary** Joladarasi, Chinnat- ekur, Pyapli, Mallapuram & Chilakanahatti ($n=266$) (%)	**Kota** Chhajawa, Badakheda, Haripura, Hanotiya & Semli Gokul ($n=250$) (%)	**Agra** Etmatpur, Boman, Raghupur, Jalalpur ($n=200$) (%)	**Ooty** Salaiyur, Chikkahali & Ermanaikkanpatti, Patthuvampalli & Thulukkamuthur ($n=250$) (%)	**Datia** Bajni, Jigna, Kalipahari, Agora & Durgapur ($n=250$) (%)	
Low	187 (74.8)	69 (32.7)	90 (40)	226 (84.9)	163 (65.2)	40 (20)	211 (84.4)	110 (44)	1096 (57.6)
Moderate	48 (19.2)	109 (51.7)	122 (54.2)	34 (12.8)	37 (14.8)	123 (61.5)	24 (9.6)	112 (44.8)	609 (32.0)
High	15 (6)	33 (15.6)	13 (5.8)	6 (2.3)	50 (20)	37 (18.5)	15 (6)	28 (11.2)	197 (10.4)

Note: The data in parentheses are in percentage.

natural resource conservation in all the watersheds developed by IISWC and its Centres in India. The overall pooled data revealed that a maximum 45% of farmers have continued adopted SWC technologies at a moderate level for natural resource conservation for sustainable management of watersheds. Similarly, 43% of farmers have also continued adopted SWC technologies at a low level and only 13% of farmers have continued adopted SWC technologies at a high level for soil and water conservation in various watersheds developed by IISWC and its different Centres in India.

3.2. Levels of discontinuance of SWC technologies by farmers

The data in Table 3 presents the levels of discontinuance of soil and water conservation technologies by farmers in the watersheds developed by IISWC and its different Centres in the country. The majority of farmers have discontinued SWC technologies at Bellary (85%), Ooty (84%), Vasad (75%) and Kota (65%) Centres at a low level, while a majority of farmers discontinued SWC technologies at Agra (62%), Chandigarh (54%) and Dehradun (52%) Centres at a moderate level. A few farmers have discontinued SWC technologies at a high level from their fields. The overall pooled data revealed that majority more than fifty per cent (58%) of farmers have discontinued SWC technologies at a low level. About one-third (32%) of the farmer population discontinued SWC technologies at a moderate level and only10.36% of farmers discontinued SWC technologies at a high level due to non-suitability to their field conditions or inability to continue the adopted technologies in various watersheds developed by IISWC and its different Centres in India.

3.3. Levels of technological gap of SWC technologies by farmers

The Table 4 revealed that the majority of farmers have adopted SWC technologies with a technological gap at Bellary (67%), Vasad (60%), Ooty (58%), Kota (58%) and Agra Centres (53%) at a low level. The majority (50%) of farmers of watersheds developed by Chandigarh Centre adopted SWC technologies with a technological gap at a moderate level. About one-fourth of farmers of watersheds developed by Chandigarh (25%) and Dehradun (24%) Centres also adopted SWC technologies with a technological gap at a high level. Similarly, the overall pooled data also revealed that 48% of farmers adopted SWC technologies with a technological gap at a low level, 34% of farmers have adopted SWC technologies with a technological gap at a moderate level and only18% of farmers have adopted SWC technologies with a technological gap at a high level in the watersheds developed by IISWC and its different research Centres in the country.

3.4. Levels of diffusion of SWC technologies by farmers

It was found that the levels of diffusion by a majority of farmers of Bellary (81%), Vasad (75%), Ooty (74%), Datia (58%), Chandigarh (53%) and Kota (52%) Centres were diffused SWC technologies at a low level. While the majority (50%) of farmers of watersheds developed by the Agra Centre were diffused SWC technologies at a high level from their fields to other farmers' fields for natural resource conservation from the watersheds developed by IISWC and its Centres (Table 5). Similarly, the overall pooled data also revealed that a majority (61%) of farmers were diffused SWC technologies at low level, followed by 29% at moderate level and only10% of farmers were diffused SWC technologies at a low level from the watersheds developed by IISWC and its Centres to other farmers' fields for soil and water conservation.

Table 4
Levels of technological gap of SWC technologies by farmers in different watershed programmes implemented by IISWC and its research Centres in India.
($n=1744$).

Levels of technological gap of SWC technologies	**Number of watershed farmers at different research Centres of IISWC**								**Pool**
	Vasad Navamota, Rebari, Sarnal, Antisar & Vejalpur Rampura ($n=250$) (%)	**Dehradun** Fakot, Raipur, Sabhawala & Langha ($n=211$) (%)	**Chandigarh** Aganpur Bhagwasi, Mandhala, Johranpur, Sabeelpur& Kajiyana ($n=225$) (%)	**Bellary** Joladarasi, Chinnatekur, Pyapli, &Mallapuram ($n=208$) (%)	**Kota** Badakheda, Haripura, Hanotiya & Semli Gokul ($n=200$) (%)	**Agra** Boman, Raghupur, &Jalalpur ($n=150$) (%)	**Ooty** Salaiyur, Chikkahali, Ermanaikkanpatti, Patthuvampalli & Thulukkamuthur ($n=250$) (%)	**Datia** Bajni, Jigna, Kalipahari, Agora & Durgapur ($n=250$) (%)	
Low	151 (60.4)	76 (36.0)	55 (24.4)	139 (66.8)	116 (58)	80 (53.3)	146 (58.4)	69 (27.6)	832 (47.7)
Moderate	83 (33.2)	84 (39.8)	113 (50.2)	45 (21.6)	63 (31.5)	36 (24)	67 (26.8)	107 (42.8)	598 (34.3)
High	16 (6.4)	51 (24.2)	57 (25.3)	24 (11.5)	21 (10.5)	34 (22.7)	37 (14.8)	74 (29.6)	314 (18)

Note: The data in parentheses are in percentage.

Table 5
Levels of diffusion of SWC technologies by farmers in different watershed programmes implemented by IISWC and its research Centres in India. ($n=1852$).

Levels of diffusion of SWC technologies by farmers	Number of watershed farmers at different research Centres of IISWC								Pool
	Vasad Navamota, Rebari, Sarnal, Antisar & Vejalpur Rampura ($n=250$)	**Dehradun** Fakot, Raipur, Sabhawala & Langha ($n=211$)	**Chandigarh** Aganpur Bhagwasi, Mandhala, Johranpur& Kajiyana ($n=175$)	**Bellary** Joladarasi, Chinnat ekur, PC-Pyapli, Mallapuram & Chilakanahatti ($n=266$)	**Kota** Chhajawa, Badakheda, Haripura, Hanotiya & Semli Gokul ($n=250$)	**Agra** Etmatpur, Boman, Raghupur, Jalalpur & ($n=200$)	**Ooty** Salaiyur, Chikkahali & Ermanaikkanpatti, Putthuvampalli& Thulukkamuthur ($n=250$)	**Datia** Bajni, Jigna, Kalipahari, Agora & Durgapur ($n=250$)	
Low	188 (75.2)	96 (45.5)	92 (52.6)	216 (81.2)	130 (52)	70 (35)	184 (73.6)	145 (58)	1121 (60.5)
Moderate	42 (16.8)	93 (44.1)	67 (38.3)	35 (13.2)	95 (38)	100 (50)	43 (17.2)	64 (25.6)	539 (29.1)
High	20 (8)	22 (10.4)	16 (9.1)	15 (5.6)	25 (10)	30 (15)	23 (9.2)	41 (16.4)	191 (10.4)

Note: The data in parentheses are in percentage.

Table 6
Extent of post-adoption behaviour of farmers towards SWC technologies in selected watersheds at different centres in the country.

Extent of post-adoption behaviour of farmers	Number of watershed farmers at different research centres of IISWC								Pool
	Vasad Navamota, Rebari, Sarnal, Antisar & Vejalpur Rampura ($n=250$) (%)	**Dehradun** Fakot, Raipur, Sabhawala, Langha ($n=211$) (%)	**Chandigarh** Aganpur Bhagwasi, Mandhala Johranpur, Sabeelpur & Kajiyana ($n=225$) (%)	**Bellary** Joladarasi Chinnatekur, Pyapli, Mallapuram, Chilakanahatti ($n=266$) (%)	**Kota** Chhajawa Badakheda, Haripura, Hanotiya, Semli Gokul ($n=250$) (%)	**Agra** Etmatpur, Boman, Raghupur, Jalalpur ($n=200$) (%)	**Ooty** Salaiyur, Chikkahali Ermanaikkanpatti, Putthuvampalli, Thulukkamuthur ($n=250$) (%)	**Datia** Bajni, Jigna, Kalipahari, Agora & Durgapur ($n=250$) (%)	
TCAI	79.7	58.9	81.1	82.8	78.6	53.2	87.1	62.8	73.0
DTI	20.3	41.5	18.6	17.3	21.8	46.7	12.9	37.1	27.0
TGI	33.7	11.6	22.8	15.7	8.9	15.7	12.9	30.3	18.9
TDI	47.9	10.4	15.7	15.6	41.8	39.5	18.2	33.4	27.8
Infusion (mean number of technologies)	1.3	0.8	–	1.8	0.04	1.7	2.4	0.6	1.2

3.5. Post-adoption behaviour of farmers towards SWC technologies

The data in Table 6 reveals the extent of post-adoption behaviour of farmers towards different SWC technologies implemented during various watershed development programmes carried out by the IISWC and its research Centres in India. It was shown that as per the TCAI values more than 60% of SWC technologies were continue adopted by farmers in the watersheds developed by IISWC and its Centres in the country except institute headquarter Dehradun (59%) and Agra centre (53%). The pooled TCAI value also shows that overall 73% of SWC technologies were continue adopted by farmers in the watersheds developed by IISWC and its Centres in the country for the cause of natural resources conservation.

According to DTI values, less than 25% of SWC technologies were discontinued or dis-adopted by farmers in the watersheds developed by all the Centres in the country except the Agra centre (47%), the Dehradun institute (41%)

and the Datia Centre (37%). Accordingly, overall the DTI value shows that 27% of SWC technologies were discontinued by farmers from their fields in the watersheds developed by IISWC and its Centres in the country. Woldeamlak Bewket (1998) also reported that the major factors that were discouraging the farmers from adopting the introduced SWC technologies on their farms were found to be labour shortage, land tenure insecurity and problem of fitness of the technologies to the farmers' requirements and to the farming system circumstances.

Regarding TGI, it was found that less than one-fifth of SWC technologies were adopted along with technological gap by the farmers in the different watersheds developed by IISWC and its Centres in the country except Vasad (34%), Datia (30%) and Chandigarh (23%) Centres. The overall pooled TGI data also revealed similar findings that 19% of SWC technologies were adopted with a technological gap by farmers out of the total continue adopted technologies in the watersheds developed by IISWC and its Centres in the country.

Diffusion of SWC technologies was also evaluated using the Technology Diffusion Index (TDI) and it was found that less than 30% of SWC technologies were diffused to other farmers' fields in nearby areas from the fields of farmers who had adopted SWC technologies during the watershed development programs, except for the Vasad (48%), Kota (42%), Agra (39%) and Datia (33%) Centres. Similarly, the overall pooled TDI data also revealed a similar condition, 28% of SWC technologies were diffused to other farmers' fields in nearby areas from the watersheds developed by IISWC and its Centres in the country for the cause of soil and water conservation on a watershed basis.

The data presented in Table 6 also revealed that an average of less than 2 SWC technologies were infused by farmers in the watersheds developed by IISWC and its Centres in India, except Ooty Centre where an average of 2.4 technologies were infused into farmers' fields in the watersheds developed by this Centre. The overall pooled data also revealed that an average of 1.2 technologies were infused into the farmers' fields in the watersheds developed by the IISWC and its Centres from outside by farmers efforts or through other organization.

4. Conclusions

The study results showed that 73% of SWC technologies were continue adopted by beneficiary farmers in watersheds developed by IISWC and its Centres in the country for the cause of natural resources conservation. The farmers discontinued 27% of SWC technologies from their fields in the watersheds. It was also found out that 19% of SWC technologies were adopted with a technological gap by farmers in the watersheds developed by IISWC and its Centres in the country. The diffusion of adopted SWC technologies also occurred, and 28% of SWC technologies were diffused to other farmers' fields in nearby areas for natural resource conservation on a watershed basis from the watersheds developed by IISWC and its Centres in the country. It was also found that on an average 1.2 technologies were infused into farmers' fields in the watersheds developed by the IISWC and its Centres from outside by farmers efforts or through other organization. Therefore, it can be concluded from the study that in the government sponsored watershed development programmes about three-fourth of SWC technologies were continue adopted for natural resources conservation and about one-fourth of technologies were discontinued due to their non-suitability or the inability of farmers to continue the technologies. Out of the total continue adopted technologies, about one-fifth of the technologies were adopted with a technological gap. About one-fourth of technologies were also diffused in nearby areas and only about one or two SWC technologies were infused into farmers' fields in the developed watersheds through farmers' efforts.

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