



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.

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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, Utrakhand 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 watershed development programme. A SWC technology-wise inventory of respondent farmers, who have adopted the technologies

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