

Review Article

Discontinuance of Agricultural Innovations: Extent and Reasons

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ABSTRACT

Agriculture sector depends on innovations because these provide the foundation for growth and development of the sector. Innovation is an idea, object or practice perceived as new or improvement over the existing one by the members of social system. Innovations in techniques, methods, varieties and implements have made India self sufficient in this sector but still certain challenges exist. There is still a wide gap between agricultural innovations developed at research institutions and their adoption by small-scale farmers and rural households. The reason is the prescription approach of knowledge generating system that leads to dissemination of the technologies which are not suited to farmers' local conditions and situations. This leads to discontinuance of a number of technologies. A number of reasons associated to it like natural hazards or circumstances like pest (bird and rodent) invasion and drought, complexity of innovations, unavailability of inputs, non-suitability of innovations to field condition, high maintenance cost etc. The alarming rates of discontinuance need immediate analysis of reasons of discontinuance. The credibility of recommended technologies is getting affected as farmers find it is difficult to continue with such technologies. This shows that there is a need to try decentralized innovations in agriculture as well.

Keywords

Innovations,
Discontinuance,
Reasons, Extent,
Challenges

Introduction

Agriculture sector depends on technologies and innovations because these provide the foundation for growth and development of the sector. Often, the terms technology and innovation are used synonymously but can be defined in different ways. Das Gupta (1989) mentioned that an innovation is an idea, object or practice perceived as new or improvement over the existing one by the members of social system. There can be two parts of an innovation; one is the 'idea' which constitutes the central element of an innovation on which itself often manifests in a material form which is second part of it.

An innovation is an idea, practice, or object that is perceived as new by an individual or the unit of adoption. Technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome. This definition implies a need or problem that a tool can help to solve. The tool has (1) hardware aspect, consisting of the material, equipment, products, and so on and (2) a software aspect, consisting of knowledge, skills, procedures, and/or principles that provide information base for the tool (Rogers, 1995). Apart from Rogers and Das Gupta there are other people who have

defined innovation in different ways like Leach *et al.*, (2012) broadly defined innovation as new ways of doing things in science and technology but associated institutions and social practices also have an essential role to play.

In order to transfer innovation or technology, the concept of transfer of technology has been evolved and refined over a period. The concept of transfer of technology encompasses three sub- systems which include knowledge generating, knowledge disseminating and knowledge consuming systems. Knowledge generating system involves researchers and research stations; knowledge-disseminating system involves extension system and knowledge consuming system involves farmers.

Despite herculean efforts, there is still a wide gap between agricultural innovations developed at research institutions and their adoption by small-scale farmers and rural households (Kroma, 2003). The reason being the prescription approach of knowledge generating system that led to dissemination of those technologies which are not suited to local condition and situation. Farmers usually discontinue such technologies.

Discontinuance is a decision to reject an innovation after having previously adopted it. Two types of discontinuance of innovations are observed which are replacement discontinuance that is rejecting an idea in order to adopt a better one that supersedes it and disenchantment discontinuance, which is a decision to reject an idea as a result of dissatisfaction with, its performance (Rogers, 2003). Alexander *et al.*, (2002) described discontinuance among farmers who previously adopted Genetically Modified crops by Ohio farmers as disadopters. Leuthold (1967) concluded

from his study of a statewide sample of Wisconsin farmers that the rate of discontinuance was just as important as the rate of adoption in determining the level of adoption of an innovation at any particular time. Ogunfiditimi (1993) used the term “abandoned adoption” to describe discontinued use of previously adopted innovation. Alexander *et al.*, (2002) described discontinuance among Ohio farmers who had previously adopted Genetically Modified (GM) crops as disadopters. Anaeto (2000) noted that discontinuance like adoption occurs in stages and can take the form of immediate, gradual or rapid disengagement.

Miller and Mariola (2008) indicated that there was a high rate of discontinuance of all the conservation farm technologies originally studied in the Parismina watershed of Costa Rica. Among adopters, 28 per cent discontinued the use of biodigestors, 40 per cent discontinued the use of effective micro organisms composting, 50 per cent stopped producing worm compost, and 67 per cent discontinued the use of bokashi composter. In another study by Loganandhan *et al.*, (2015) on post adoption behavior of farmers in semi-arid watershed areas reported that there was 100 per cent discontinuance of technologies like diversion drain, water ways / grassed waterways and zing terrace. It was also found that agronomical technologies like red gram and border strip were completely discontinued. Huria (2016) in a study at Udham Singh Nagar district found that overall discontinuance of innovations like direct seedling rice, bio-agents, mushroom cultivation, polyhouse cultivation, nutritional gardening are 46.05 percent. Anaeto (2016) in a study on adoption and discontinuance utilization of alley farming by farmers reported that most of the farmers (40 percent) had gradual form of

discontinuance behavior while 23.33 percent had replacement, 12.5 had rapid, 14.16 had immediate and 10 percent had disenchantment discontinuance behavior. Moses *et al.*, (2016) in a study on discontinuance of Yam Minisett Technology (YMT) utilization of farmers in Benue state Nigeria reported that 32 percent respondents discontinued YMT technology and packages that were discontinued were sole cropping (30.7%), seed treatment with minisett dust (30.7%), pre-sprouting (28 %), staking using Trellis of pyramid (26.7%), transplant with short vines without open leaves (22 %), and spread minisett under shade to air dry (20.7%).

The above studies indicated that the rate at which innovations are discontinued need immediate analysis and much focus should be given to the reasons of discontinuance of agricultural innovations. However, several studies were conducted in order to find the reasons like Saxena (1995) in a study on adoption of micro-irrigation found that despite governmental subsidies of up to 75 percent on equipment cost, the rate of discontinuance in Maharashtra has been very high. This was due to technical problem in installation and design. Singha and Baruah (2011) in a study on rice technology revealed the fact that farmers were lagging behind in adoption of recommendations such as seed treatment, application of manure and fertilizers and plant protection measures under different farming systems. Here complexity of innovations led to the discontinuance of innovations. Mustapha *et al.*, (2012) in a study on analysis of factors influencing discontinuance of technology in Nigeria reported that about (21.5 %), (75%), (37%), (75%) and (50%) of the respondents attributed reasons for discontinuance of the improved rice technologies to unavailability of improved seed varieties, inability to

secure the use of tractor, inability to purchase fertilizer and herbicides as well as cumbersome nature of manual operation of the recommended spacing technology respectively. Bagdi *et al.*, (2015) in a study on post-adoption behavior of farmers towards soil and water conservation technologies of watershed management in India found that the farmers had discontinued SWC technologies due to non-suitability to their field conditions. Imarhiagbe *et al.*, (2015) in a study on factors associated with discontinuance in adoption of rubber production technologies among small scale farmers in Edo State, Nigeria reported that there were several factors that led to discontinuance and these were inadequate capital to continue with the technology (94.4%), unavailability of improved planting materials (90%), high labour cost (88.9%) and poor extension contact (85.6%). Apart from these reasons studies also showed various other reasons like non availability of inputs, lack of training, lack of fund, lack of extension – agency contact etc.

In conclusion, improved technologies have greater impact on agriculture sector. Such technologies could be a potential means of increasing production and productivity. Discontinuance of such technologies is a major issue of concern. Analyzing extent of discontinuance it can be seen that in most of above said studies nearly 50 percent recommended technologies have discontinued. The alarming rates of discontinuance need immediate analysis of reasons of discontinuance. Several reasons are associated with the discontinuance of innovations like complexity of innovations, unavailability of inputs, non-suitability of innovations to field condition, high maintenance cost etc. Considering all these aspects it can be clearly stated that at some point or other the technologies which are

recommended to the farmers are not suitable to field situation and condition, this led the discontinuance of technologies. The credibility of recommended technologies is getting affected as farmers find it is difficult to continue with such technologies.

The present scenario emphasizes over the fact that it's high time to collaborate centralized and decentralized diffusion system. The advantages of one system can be applied and harnessed to strengthen the other, leading to generation of more relevant and appropriate innovations. Such an integrated system will benefit from all the advantages inherent to formal institutions such as availability of resources and network for dissemination of innovations. The innovation generated by such an integrated system will be need based, locally relevant, socially acceptable due to users' involvement and lead to greater adoption.

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