



INNOVATION IN AGRICULTURE WITH REFERENCE TO WOMEN IN RURAL HARYANA, INDIA

¹Sumit, ²Meera Rani and ³Neera Verma

¹ICSSR Doctoral Fellow, Department of Economics, School of Social Sciences, Green Campus, Central University of Kashmir, Ganderbal, Pin Code: 191201, Jammu and Kashmir, India.

²Department of Human Development and Family Studies, CCS Haryana Agricultural University, Hisar-125001, Haryana, India

³Department of Economics, Kurukshetra University, Kurukshetra-136119, Haryana, India

*Corresponding Author : sumitnomics@gmail.com

Abstract

In this research article, the researcher discusses the issues and importance of innovation in agriculture in the context of women. Researcher argues that for social inclusion, women empowerment and to close the gender gap; innovation in agriculture can play a significant role. This study was based on the 15 semi-structured interviews from women, eight from the Josar and seven from Kirmach village of the Kurukshetra District of Haryana. The study was qualitative in nature. The major characteristics of the interviewed women were that still, they were residing under the patriarchal norms. Results indicate that innovation in agriculture has a significant role to change their life but many societal, political, cultural and economic barriers are making the harder for them. The results provide an ample commendation to the policymakers that the innovation in agriculture should be promoted and regarding issues should be tackled on a high priority basis so that the multidimensional benefits of innovation might be achieved.

Keywords: Innovation, Innovation in Agriculture, Women, Women Empowerment, Inclusive Development, and Qualitative Study.

Introduction

The foremost goal of Sustainable Development Goals (SDGs) is 'leave no one behind'. This goal's vision decentres around the poverty eradication, better income distribution and sustainable and inclusive development discourse of the society. To make an inclusive society realistic, innovation is highly supportive (Osakwe and Moussa, 2017). Innovation encounters low structural transformation and promotes inclusive development. Many economists like William Baumol, Paul Romer, Schumpeter, etc. advocated the role of innovation in augmentation of economic growth. William Baumol says that "a reliable stream of innovation is the most important requirement for the remarkable long-run economic growth" (Baumol, 2004). Innovation is important for the development of all sectors of the economy. Generally, the economy is divided into three sectors; primary, secondary and tertiary sectors. The primary sector covers agriculture and allied activities; secondary, comprised of the industries and tertiary sector is devoted to the services. In India, a large population is engaged in the primary sector and large of them are living in rural areas. Thus, for agricultural development and rural development, the role of innovation is very vast. Socioeconomic problems at grassroots levels hinder the development process. Innovation is an infallible arrow and an important tool to tackle these problems. The lower interest in agriculture is due to the negligible speed of innovation in agriculture. The multi-layered socioeconomic problems at grassroots levels making the common person's life like hell. The socioeconomic condition of women is more serious at the local level. They are stranded into wage discrimination, exploitation, poor health, poverty, unpaid work etc. socioeconomic problems. They are excluded at each and every stratum of society. The contribution of women in agricultural and rural development is seldom rewarded (Ogunlela and Mukhtar, 2009), although they actively work hard serried with men. In this matter,

innovation helps to close the gender gap and enhancing productivity. So, the role of innovation particularly in gender context must be studied and promoted in agriculture which is in the underestimated situation. There are so many obstacles that must be sorted out. In India, orthodox traditions are stronger than the laws, like the patriarchal norms, gender and caste-based discrimination, etc. Still, rural women face many challenges and far from the main segment of society. So there is a big requirement that we must do 'outside the box' for the women empowerment and gender equality. There is a concept of innovation. Innovation is a process, what's its speed that is a matter. Are we welcome our new ideas or we fear them? Innovation requires the thinking of 'outside the box'. So the innovation-based studies are very essential for making societies progressive. This study is focused on the two objectives; first, to comprehend the significance of innovation in agriculture for women and final, to examine the responsible barriers of innovation in agriculture in the context of women.

Innovation

There are two important terms, invention and innovation. Invention means the creation of the new product for the first time while innovation is the improvement of the existing products', process and services. Innovation has many definitions across different fields in academia. Mulgary and Albury (2003) define; "innovation is the creation and implementation of new processes, products, services and methods of delivery which result in significant improvements in outcomes, efficiency, effectiveness or quality". Cooper (1998) proposed innovation as the multidimensional concept. There are many innovation theories and models. One of the innovation theory in social science is the diffusion of innovation theory. This theory was propounded by E. M. Rogers in 1962. The origin of this theory comes from the information and communication subject. This theory tells about how an idea or product gains

momentum or spreads in the social system over a period of time. The adoption of the new idea or new product does not happen simultaneously rather it is a process, it takes time to spread. The adoption process depends upon the behavior nature of the population or the social system. Whether they believe in the continuous change or they are laggards. Rogers (1971) divides the adopter categorization into the four categories; first is innovators which are 2.5 percent, second is early adopters 13.5 percent, third is the early majority is 34 percent, the late majority is 34 percent and laggards are 16 percent to adopt the new ideas or new product in the social system or in the group. Another important theory in social science, particularly in economics is Schumpeter's innovation theory of the trade cycle. According to Joseph Schumpeter, innovation means, the introduction of a new product, adoption of the new method of production, the opening up of a new market, the takeover of a new source of raw material and re-organization of the production processes within the firm. According to Schumpeter, the trade cycles are resultant of the innovation activities and are the inherent part of the process of economic growth in the economy. According to Schumpeter, to get profits, innovation is mandatory (Sledzik, 2013). He divides the innovation into the four dimensions; invention, innovation, diffusion and imitation (Burton, 1999). He described the 'innovation' as the driver of the development (Schumpeter, 1934).

Innovation in Agriculture and Women

India is challenging many problems like population explosion, climate change, poverty, hunger, malnutrition, inequality, etc. Large numbers of problems are directly or indirectly are linked with agriculture. The keys to the multi-sectoral growth of the society are stranded along with the dream of the development of agriculture. The development of agriculture in our developing economy only can be achieved through innovations. To make agriculture competitive and sustainable innovation has a significant role. According to Inter-American Institute for Cooperation on Agriculture innovation is (IICA, 2014), "a process by which something new is implemented in a given context; it is socially appropriate and provides benefits for the parties involved." Innovation boosts economic growth and competitiveness in the countries (IICA, 2014). Organization for Economic Cooperation and Development (OECD, 2005) define innovation as,

"Innovation is the implementation of something new or improved (whether technology or otherwise) in products (goods or services), processes, marketing or organizational methods. In other words, it means applying ideas, knowledge or practices that are new to a particular context with the purpose of creating positive change that will provide a way to meet needs, take on challenges or seize opportunities. Such novelties and useful changes could be substantial (a large change or improvement) or cumulative (small changes that together produce a significant improvement)."

Women are the backbone of the rural agricultural economy. They highly participate in agriculture, look after the livestock, bringing up the children and actively handle the other household chores. They generally confront their life exploitation, discrimination, and un-recognition of their work in society. The ownership of the socioeconomic resources almost entirely is in the favors of men. The decisions concerning family and agriculture are mostly taken or

dictated by the men in the family. The control power of the household's finance is almost completely handled by the men. Overall the role of the women in a society considered as the lower level. The land titles ownership, bank accounts, accessibility to credit etc. shows the negligible inclusion of women at the local level. After the constitutional safeguards and economic reforms, women's roles are continuously increasing. The streams of the innovative products are also enhanced after the economic reforms or after becoming the partner of the global world. Although many innovative products and services are becoming popular day by day still many are far from the accessibility of the local women. There is a need to empower women and enhancing productivity in agriculture through innovation. In line with this, the 11th and 12th five-year plans were focused on inclusive development. Inclusive development means care the cared less. Inclusive development ensures the opportunities for all sections particularly for the poor and marginalized women (Kabeer, 2012). In this inclusiveness target, the multidimensional benefits can be enhanced through the innovation. Dhaka *et al.* (2012) identified from his study that there is a very high requirement for agricultural information on improved agricultural technologies. It was also identified that the information sources for the farm women were based on informal sources. Doss & Morris (2001) find out the reason for the different adoption rates of agricultural technologies for men and women in Ghana. They identified that rather than the gender the adoption decision depends on the access to the resources. However, the accesses to the resources are more favors in men than women. So, the benefits of the adoption of the technologies remained unequal. Ayoade and Akintonde (2012) identified the main constraints in the adoption of innovation in agriculture were the unstable market prices and the irregular visits of extension agents in the Isokan Local Government Area, Osun State, Nigeria. Clark and Clark (2008) found that Taiwan's innovation policy changes women's roles in society. The economic participation in the manufacturing sector, government initiatives at the urban and at local levels and home-based "living room factories" led the women socially, politically and economically in the society. Chen (2005) Studied the role of the SEWA's women worker's in diffusing the innovation of microfinance. The initiative was started by the SEWA's women workers to support the poor working women through the SEWA bank. SEWA (Self Employed Women's Association) is a trade union of informal women workers in Gujarat. This microfinance based approach helps the women to strengthen their livelihoods, ensuring the financial security, addressing their rights, health and social concerns. Field and Torero (2006) studied that the land titling policy in Peru for the married couples was a great innovative idea for the poor people to secure the property rights and to access the credits markets. From this policy, within about five years the women represented more than fifty percent in the land titles. This policy helped the women to improve employment opportunities and access to government credit. This policy also helped the women to enhance their honor in society. Khan *et al.* (2007) studied the role of the Grameen Village Phone Programme to improve the livelihoods of rural poor women financing micro-credit through the use of information and technologies. Grameen bank provided finance and training to the women to become the operators of the mobile booths. Most of the booth operators works done efficiently and enhanced their household's wellbeing. This

also helps in providing the accessibility of the telephone at the local level. The visibility and participation of the local women in the market also increased through this scheme. So, from the above studies, it can be inferred that innovation in agriculture in the context of women has an important role. But, a few research gaps also have been identified from the existing literature; first, there is a deficiency of research on the agricultural innovation's role in the context of women. Second, the nexus of poverty and exclusion of the women and agriculture and rural development based studies are scarce in the social science literature. Finally, the qualitative based study on the demarcated theme's is also rare. This study addressed the two research questions; first, what the significance of innovation in agriculture for women is? And the final is what are the responsible barriers of innovation in agriculture for women?

Materials and Methods

Any kind of research study has its own philosophical framework. The philosophical framework of research provides the understandings of the ontology, epistemology, and methodology of particular research. Ontologically this study has a social constructivist approach because social constructivist research has multidimensional worth and covers the specific population where the participants can take part actively (Kanbur, 2001). This study enquires about the social reality of a particular phenomenon which is a product of processes (Blaikie, 1993). This study examined how individuals are experiencing a particular phenomenon in society. Epistemologically this research has interpretive nature because different people look at a particular phenomenon differently and the interpretive approach helps to understand the social world (Grix, 2004). Methodologically this study has a qualitative nature. Quantitative research is more associated with epistemological, 'positivism' and ontologically, 'objectivism' aspect on the other hand epistemologically, interpretivism and ontologically, 'constructionism' aspect is more close to the qualitative study (Bryman, 2004). Qualitative research is associated with the use of the empirical materials of case study, personal experience, introspective, life story, interview and observations (Denzin and Lincoln, 1994; Mason, 1996). Therefore, qualitative research establishes an understanding of women's experiences about the significance and barriers of innovation in agriculture than quantitative research strategy. The study was conducted in the Kurukshetra district of Haryana. Haryana is a northwestern state in India and Kurukshetra district is situated in the northern part of Haryana. Kurukshetra was studied because this is the historical city and contains a large and ancient village. To get the answers the research questions, a total of 15 women respondents were interviewed. All interviewed women were from the Thanesar tehsil. From Josar village 8 and, from Kirmach village 7 interviews were conducted. All women respondents were from 30 to 52 age years old. The sampling method used for the study was purposive sampling. A research instrument to collect the information was used semi-structured interview schedules and interviews were targeted to those respondents who were ready to provide me the necessary information. A semi-structured interview schedule helps both, interviewer and the interviewee to create a free and cooperative atmosphere. A semi-structured interview schedule also helps to provide the ample size of flexibility at the interview time (Grix, 2004). The survey was conducted in the month of

August 2019. Data were analyzed using the thematic analysis technique.

Results

This section presents the analyses of the socio-economic features of the women respondents, significance and experienced barriers of innovation in agriculture by the women. In order to analyze the barriers of innovation and significance of innovation; first, this is necessary that we know about the socioeconomic characteristics of the women respondents. The socioeconomic features were about the identification of the head of the household, age group, caste category, marital status, education level, nature of the work done by the women, the recognition of their work, participation in decision-making, mobile have or not, ATM Card have or not, ATM card ever used or not and have any registration of property, electricity bill, gas connection copy on their name or not. This section has two sub-sections; first is about the socioeconomic profile and last is about the significance and experienced barriers of innovation in agriculture.

Socio-economic profile of the women respondents

All of the women respondents were from the Hindu religion. The women respondents were from the 30 to 40 were eight and 41 to 52 were seven. Among all the households, the head of the household was the male candidate. In this study three women were from the general caste, seven from OBCs (Other Backwards Castes) and five were from the Scheduled Castes (SCs) category. General caste means those who have the highest socio-economic status in the Hindu society and OBC's were those who have a lower socioeconomic status from the General and are higher from the scheduled castes. Scheduled Castes (SCs) are the group of those castes whose socioeconomic status is very low in the traditional Hindu society. All the women were married. Among all women respondents, nine were illiterate, three up to the primary, two up to middle and one of them was studied up to secondary level. All scheduled castes women were uneducated. The nature of work done by women respondents is presented in the table, See Table 1.

In the rural economy, the identification of women's main occupation is very challenging. They are homemakers, weaver, sewing, making handicrafts, animal husbandry, care the children and actively participate in the agriculture. They do not work like the work in the formal labor market but they remained busy all the time with the household chores and the agricultural activities. From the interviewed women, two general caste women, from OBCs three women and from SCs two women were occupied in the income-generating activities (Like Dairy, Fowler plantation and Vegetable production. OBCs and SCs women largely were occupied in the day labourers in the fields. Among all 15 women, eight women said that they are homemakers/Housewives (See Table: 1). In survey time this was also asked from the respondents that what they think about their recognition of their work, six of them said that their work has recognition in the family, four said that their work has no any importance in the family and five said that we cannot say in this matter, what the family members think they do not know. Among all respondents, only four were have their own mobile phone and all general castes women were have the mobile phones. All of the participants' women have a bank account, nine of them also have the ATM Card and one of them was also

aware of the use of the ATM card. Among the entire sampled women, one of them said that she has a plot of land on her name; three said that the gas connection copy of their household is on her name and one of them (SC women) said that the electrical connection of her household is on her name. The participation in the decision making by the women is shown in table 2, See Table: 2.

In table 2, Independent decision means women are free to take the decision. The joint decision means the decision is taken jointly by the wife and husband, both play an equal role in decision making and no decision/ decision taken by her husband showed the women takes no any decision, the husband takes all decision and this showed the traditional culture of the society, in which man is supreme. Table 2 depicts that to start the new business, for doing the paid work, in the adoption of the new product of the market, in child education and to purchase the routine household items the decision was taken by her husband. In child care, the role of women somehow can be identified. The vote casting decisions were taken jointly.

Significance and Experienced barriers of Innovation in Agriculture by Women

To study the significance of innovation in agriculture with reference to women, the question was asked to the women respondents that, what significance of innovation in agriculture particularly in your context is? The respondents' answers were grouped into the themes in table 3, See Table: 3.

To examine the barriers of innovation in agriculture for women the question was asked to respondents that what are the barriers limiting the use of innovation in agriculture by the women? The respondents' answers were grouped and presented in table 4, See Table: 4.

This study identified that the socioeconomic profile of the women respondents was low. Decisions about household making were only taken by male members. Large of them was a homemaker and have a lower level of academic and financial literacy. The women respondents' views indicate that innovation in agriculture has immense significance for them but many of the constraints are making the path of innovation in agriculture harder for them.

Discussion

The socio-economic condition of women in rural areas is depending on their male counterpart's situation. Still, they are not free from the customary rules. All decisions were taken by the male candidates. Patriarchal nature is still strong in society. Women have mostly engaged themselves in the homemaker and agricultural-based activities. The findings of the socio-economic profile of the women respondents are also corroborated with the findings of Ghosh and Ghosh (2014) and Ajewole (2015). The first research question was what is the significance of innovation in agriculture for women? Based on the shared views from the women respondents who participated in the study, this research identified 7 main indicators of significance of innovation in agriculture for women. The significance of innovation for women in agriculture was, closing the gender gap, closing the gap in social capital, increase the household and personal wellbeing, enhance the employment opportunities and recognize their work, closing the technological gap, enhancing the confidence and making their identity visible

and for the overall development. The result of the study is also congruent with the findings of UN Women (2017). The second research question was what are the responsible barriers of innovation in agriculture for women? The study revealed that 7 main barriers of innovation in agriculture with reference to women identified. The identified barriers were grouped into the social, cultural, political, economic, technical, policy and public level and other main barriers. The results of the social and economic constraints of the study are also corroborated with the findings of Ghosh and Ghosh (2014). Public and policy level identified constraints are also explored by Ayoade and Akintonde (2012) and Odoemelam (2016).

Innovation in agriculture can play a pivotal role because a large population is residing in rural areas and directly or indirectly they are engaged with the agricultural sector. The exclusion of women at different levels can also be tackled through innovation in agriculture. The innovation constraints in agriculture with reference to women are stranded into the social, economic, cultural and political fields of the society. The public delivery of the women-oriented products and schemes should be monitored on a timely basis and should be more accountable. Innovation has many benefits for productivity enhancement in the agriculture sector and in the women empowerment. Innovation closes the gender gap. At the grassroots level, innovation can enhance the wellbeing of the women labourers not only in improving the health status but also for the overall life standard as well. Innovation helps in accelerations of the women empowerment, freedom and closing the gender gaps. Together effect of the innovation and inclusion of the women in agriculture can help in poverty alleviation and enhancing productivity. Although the path of innovation, particularly in gender context in agriculture, is not easy, this does not mean that it is impossible. It is possible, with joined-up efforts by the government and with the local society. So the gender sensitive issues must be considered in innovation for the removal of gender based inequality and for the societal prosperity. To close the gender inequality in human capital, labour, and financial market there are great requirements of improvement in the education system, improving the women's labour market participation, improvement in the health and nutritional facilities for the women, tackling the wage gap problem, etc. must be on a priority basis. On the academic front, the research on the nexus of innovation with the women empowerment, agricultural and rural development should be promoted. On the limitation front, this study is based only on the qualitative aspect not on the quantitative or the mixed methods approach.

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ANNEXURES

Table 1 : The Nature of Work done by Women

Nature of work		Number of Respondents
Domestic work	Homemaker: cooking, cleaning, childcare, feeding family members, etc.	8
Income-related work	Day laborers, dairy, harvesting, sowing, reaping, gathering vegetables, gathering flowers, sewing, making handicraft items.	7
Total		15

Source: Fieldwork

Table 2 : Participation in decision-making by women

Participation in decision-making by women (N=15)			
Decision Indicators	Independent decision	Joint decision	No decision/ decision taken by her husband
Child care	6	7	2
Child education	3	4	8
To purchase the routine households' items	4	4	7

Vote casting	2	8	5
Doing paid work	2	4	9
To start-up new business	0	4	11
To adopt the new product of the market	2	5	8

Source: Fieldwork

Table 3 : Women Respondent's Views about the Significance of Innovation in Agriculture

Group Indicator	Explanation
Closing the Gender Gap	Innovation closes the gender gap, because the new ideas, new products close the gender differences.
Increase the Household and Personal Wellbeing	By innovation, their income would be increase and form the enhanced income they can care about themselves and their children in a better way. Innovation helps in poverty alleviation and takes prosperity at household and personal level.
Enhance the Employment opportunities and Recognition Their work	In agriculture more or less work depends on the weather and on the product cycle. Innovation can help in enhancing employment opportunities and productivity. If they do work in an innovative way their work would have the worth and their work might be recognized by all family members.
Closing the Technological Gap	Innovation can help remove the technological gaps between men and women. Closing the technology gap requires that the necessary technologies exist to meet the priority needs of female farmers, that women are aware of their usefulness and they have the means to acquire them.
Enhancing confidence and making their identity visible	Innovation can help them to make their identity visible and enhancing their confidence in society.
For overall development	Innovation can help to improve the status, freedom, education, finance and health. To enhance the purchasing power of the women and makes strong them in the primary, secondary and tertiary sectors. Innovation helps in social inclusion and women empowerment.

Source: Fieldwork

Table 4 : Women Respondent's Views about the Barriers of Innovation in Agriculture

Group Indicator	Explanation
Social Barrier	The rigidity of the caste and patriarchal nature of the society. Generally, we are considered as the second class and our voices are ignored.
Cultural Barriers	The traditional purdah system, The aspiration of the only son in the family, etc.
Political Barriers	Low participation in household and community level decision, low awareness about the government scheme, negligible knowledge about the rights, Low political representation.
Economic Barriers	All economic resources are in favor of men. Property rights are totally in favor of men. We are totally handicapped in the society; we continue to face economic discrimination, low wage, wage insecurity, exploitation, a lower enhancement to do business, high risks and lower support from the family members and aid by government, the problem of finance, low level of financial literacy lower availability of gender-sensitive products.
Technical Barriers	In agriculture the participation of women is big. On the other hand, there is a lack of women-friendly products. Lower promotion of gender-oriented research.
Policy and public level	Low attention and lower level of the monitoring of the women-oriented development based schemes. Corruption in the schemes. Traditional rules are yet stronger than the laws. Low awareness about the schemes and their rights.
Other Main Barriers	Poverty, Inequality, Malnutrition, Lower level of education, Low support by the family members, the problem of finance, etc.

Source: Fieldwork