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Anjali Tomar
Ph.D. Scholar, Department of Agricultural Extension and Communication, RVSKVV-Gwalior, Madhya Pradesh, India

Dr. Shobhana Gupta
Professor and Head, Department of Agricultural Extension and Communication, RVSKVV-Gwalior, Madhya Pradesh, India

Dr. Shrishti Bilaiya
Assistant Professor, Department of Agricultural Extension and Communication, RVSKVV-Gwalior, Madhya Pradesh, India

Hans Raj Jatav
Scientist, KVK, Ujjain, Madhya Pradesh, India

Siddharth Namdeo
Ph.D. Scholar, Department of Agricultural Extension and Communication, RVSKVV-Gwalior, Madhya Pradesh, India

Corresponding Author:
Anjali Tomar
Ph.D. Scholar, Department of Agricultural Extension and Communication, RVSKVV-Gwalior, Madhya Pradesh, India

Constraints faced during the innovation development process by farmer innovators of Madhya Pradesh, India

Anjali Tomar, Dr. Shobhana Gupta, Dr. Shrishti Bilaiya, Hans Raj Jatav and Siddharth Namdeo

Abstract
The present study was conducted in Madhya Pradesh state in the year 2022-23, in order to identify the constraints faced by farm innovators during the process of development of innovation. With the help of database of awardees and achiever farmers 15 cases of innovative practices were selected. Case study method was used and data was collected by personal interview method. The results revealed that, major constraint expressed by the farm innovators were that they face, more demotivation from others followed by lack of awareness about financial support, lack of technical guidance, lack of market information, lack of timely guidance and unavailability of proper storage facilities. The policy maker and developmental agencies should have to consider these constraints to encourage and motivate farming community to increase their participation in the process of innovation.

Keywords: agriculture, farmer innovators, innovative practices, constraints

Introduction
Agriculture plays an important role in Indian economy and continues to be one of the vibrant sector in ensuring food security of the country. Development of this important sector is depend on various factors like resources, services, education, research and innovation. Generally, the term innovation at farmer level means adoption of new technology but as farming is the major occupation, many new practices or modification in the existing practices is the part and parcel of their life. These modification or changes in the existing practices refers to Farmers Innovations.

Farmers everywhere in the world are continuously developing ways to solve their problems, fulfilling their needs, or finding ways to cope with the difficulties they have in their farming.

Farmers innovations in agriculture refers to the process through which individuals or groups within a given locality, discover or develop and apply improved ways of managing the available resources, building on and expanding the boundaries of their knowledge (Critchley *et al.* 1999) [2].

During the innovation development process farmers faced several hurdles or constraints which limits them in producing or developing the innovation. Finding out the various constraints faced by the farmers during the informal experimentation for developing innovation and analysis of the innovation development process will fetch a base which can be utilized by scientists, extension agents and user system. A proper feedback from the farmers will certainly provide an insight to the scientists for further research or modification of the farmer innovations.

With this background the study was conducted to know the constraints faced by farm innovators during the development of innovations in Madhya Pradesh in the year 2022-23 and this study also involves suggestions to overcome these constraints.

Material and Methods
The present study was conducted in Madhya Pradesh state to identify the constraints faced by farm innovators during the process of development of innovation. The database of awardee and achiever farmers from the State Department of Agriculture, both the State Agriculture Universities, prominent NGOs and other private agencies were pooled together and 15 cases of innovative practices were selected. Case study method was used and data was collected personally by the researcher through interview schedule.

Constraints were recorded on the basis of responses expressed by farm innovators and further were categorized into major heads and sub heads. Statistical tools like frequency, percentage, standard deviation and mean score were used for analysis of data, and ranking was done on the basis of obtained mean score.

Results and Discussion

The oxford dictionary meaning of the word constraints is confinement, restriction of liberty or compulsion of circumstances or compulsion put upon the behaviour. Reading (1971) defined constraints as the use of force to influence or prevent an action or quality or state of being compelled to do or not to do something.

In the context of present study the impediments/constraints that are limiting the farmers to develop the innovation was taken into consideration. The responses were collected through schedule for constraints and frequency and percentage was calculated. Mean Score of responses for each constraints was obtained and ranking was done on the basis of mean score.

Farm innovators asked to give their responses about constraints faced by them during the innovation development process by prioritizing them as most important, important and least important. Further they were divided into different categories i.e. economic constraints, social constraints, technical constraints, marketing constraints, organizational constraints, infrastructural constraints. Weighted mean was calculated to rank the constraints under various sub-heads.

Table 1: Constrains faced by the farm innovators during the innovation development process

S. No	Constraints	Mean Score	Rank
1.	Economic constraints	2.13	v
2.	Social constraints	2.28	ii
3.	Technical constraints	2.18	iv
4.	Marketing constraints	2.34	i
5.	Organizational constraints	2.26	iii
6.	Infrastructural constraints	2.00	vi

From the Table 1, it can be observed that out of six major constraints, farm innovators had identified marketing constraints as the major issue with mean score 2.34 and rank i, followed by social constraints with mean score 2.28 and rank, organizational constraints with mean score of 2.26 and rank iii. In addition to this, Technical constraints and economic constraints secured ranks fourth and fifth with mean score of 2.18 and 2.13 respectively. Infrastructural constraints ranked last with mean score of 2.00

Table 2: Constraints faced by the farm innovators during the innovation development process under major heads

S. No	Constraints	M.I.	I	L.I.	M.S.	Rank
1.	**Social constraints**					
a.	More demotivation from others	11 (73.33)	04 (26.66)	00 (00)	2.73	i
b.	Lack of social acceptance	09 (60.00)	04 (26.66)	02 (13.33)	2.46	ii
c.	Lack of appreciation	07 (46.66)	05 (33.33)	03 (20.00)	2.26	iii
d.	Lack of family support	04 (26.66)	02 (13.33)	09 (60.00)	1.66	iv
2	**Economic constraints**					
a.	Lack of awareness about financial support	09 (60.00)	03 (20.00)	03 (20.00)	2.4	i
b.	Lack of financial support from government organizations	08 (53.33)	04 (26.66)	03 (20.00)	2.33	ii
c.	Lack of availability of credit	08 (53.33)	03 (20.00)	04 (26.66)	2.26	iii
d.	Low price of produce	07 (46.66)	03 (20.00)	05 (33.33)	2.13	iv
e.	Complex loan procedure of banks	06 (40.00)	02 (13.33)	07 (46.66)	1.93	v
f.	High cost of inputs	04 (26.66)	03 (20.00)	08 (53.33)	1.73	vi
3.	**Technical constraints**					
a.	Lack of technical guidance	10 (66.66)	03 (20.00)	02 (13.33)	2.53	i
b.	Unavailability of inputs	07 (46.66)	03 (20.00)	05 (33.33)	2.13	ii
c.	Low availability of mechanics/labour	04 (26.66)	08 (53.33)	03 (20.00)	2.06	iii
d.	Low availability of custom hiring centres	06 (40.00)	03 (20.00)	06 (40.00)	2.00	iv
4.	**Marketing constraints**					
a.	Lack of market information	11 (73.33)	04 (26.66)	00 (00)	2.73	i
b.	Local market facilities not available	09 (60.00)	06 (40.00)	00 (00)	2.6	ii
c.	High cost of advertisement/promotion	08 (53.33)	03 (20.00)	04 (26.66)	2.26	iii

d.	Frequent fluctuation of market price	06 (40.00)	07 (46.66)	02 (13.33)	2.26	iii
e.	Exploitation by market intermediaries	04 (26.66)	05 (33.33)	06 (40.00)	1.86	iv
5.	**Organizational constraints**					
a.	Lack of timely guidance	10 (66.66)	03 (20.00)	02 (13.33)	2.53	i
b.	Lack of awareness about supporting organizations	09 (60.00)	04 (26.66)	03 (20.00)	2.33	ii
c.	Lack of recognition	08 (53.33)	05 (33.33)	02 (13.33)	2.26	iii
d.	Lack awareness about IPR/Patent	07 (46.66)	05 (33.33)	03 (20.00)	2.13	iv
e.	Lack of knowledge about documentation	06 (40.00)	04 (26.66)	05 (33.33)	2.06	v
6.	**Infrastructural constraints**					
a.	Unavailability of proper storage facility for produce	07 (46.66)	06 (40.00)	02 (13.33)	2.33	i
b.	Unavailability of proper workshop for machinery	05 (33.33)	00 (00)	10 (66.66)	1.66	v
c.	Irregular supply of electricity	04 (26.66)	05 (33.33)	06 (40.00)	1.86	iv
d.	Lack of design support for refinement	08 (53.33)	03 (20.00)	04 (26.66)	2.26	ii
e.	Lack of communication facilities	03 (40.00)	03 (20.00)	06 (40.00)	2.00	iii

(Figures in parenthesis indicate percentage)
MI-Most important, I- Important, LI-Least important, MS- Mean Score

Social constraints
The farmer innovators encountered various social constraints while developing the innovations. Major constraint expressed by the farm innovators were that they faced, more demotivation from others as the statement ranked first with mean score 2.73, followed by lack of social acceptance, lack of appreciation and lack of family support with rank second, third and fourth, respectively. The results are in line with the study of Sanketh *et al.* (2019) [5].

Economic constraints
Data regarding economic constraints revealed that major constraint faced by the farm innovators during the innovation development process was lack of awareness about financial support with rank first and mean score 2.4, followed by lack of financial support from government organizations, lack of credit available, low price of produce, complex loan procedures of banks and high cost of inputs as the statements secured rank second, third, fourth, fifth and sixth, respectively. The results are similar with the results of Ustyuzhantseva (2015) [8].

Technical constraints
The farmer innovators faced technical constraints during the process of development of innovation primarily due to lack of technical guidance as the statement obtained a mean score of 2.53 and rank i. The other issues were unavailability of inputs, low availability of mechanics/labour and low availability of custom hiring centres with rank second, third and fourth, respectively. Similar findings were reported by Shilpashree (2011) [6].

Marketing constraints
When the farmers were interviewed they expressed that major constraints faced by them were related to the market. Majority of them said that they were facing problem relating to lack of market information securing first rank with mean score 2.73, followed by issues like unavailability of local markets, high cost for advertisements/commercialization, frequent fluctuation of market price and exploitation by market intermediaries ranked second, third and fourth, respectively. The results matched with the findings of Danagoudar (2016) [3].

Organizational constraints
Organizational constraints reported by farm innovators were lack of timely guidance, lack of awareness about supporting organizations, lack of recognition, lack of awareness about IPR/Patent and lack of knowledge about documentation which were ranked first, second, third, fourth and fifth, respectively. The similar findings are reported by Akinnagbe (2010) [1].

Infrastructural constraints
The farmer innovators faced least issues related to infrastructural constraints. Under this category major problem faced by the farmers were related to unavailability of proper storage facility for their produce as the statement got rank first with mean score 2.33, followed by the other problems like lack of design support for refinement, lack of communication facilities, irregular supply of electricity, unavailability of proper workshop for machinery ranked second, third, fourth and fifth, respectively. The results are similar with the results of Singh (2020) [7].

Conclusion
Based on the results of the study it can be concluded that during the development of grassroots innovations farmers faced several constraints, such as- social, economic, technical, marketing, organizational and infrastructural constraints. It was found that, majority of the problem faced by innovator farmers were related to marketing of their innovations like

unavailability of local markets, lack of market information. Further, it was also revealed that, majority of the innovative farmers faced issues like more demotivation from others, lack of awareness about financial support, lack of technical guidance, lack of timely guidance and unavailability of proper storage facility for produce. Hence, the findings indicated that farmers are keen to innovate more but due to various constraints many innovations did not reach the final stage. Therefore, concerned organizations should lend their support to those farmers. This will increase the number of quality innovations as well as farmers will get the desired profit.

Suggestions offered to overcome these constraints

- The policy maker and developmental agencies should have to consider these constraints to encourage and motivate farming community to increase their participation in the process of development of innovation.
- The extension functionaries should take the initiatives at the grass root level in developing the contacts with the farm innovators and they should be encouraged to take part in various extension activities like farmers day, demonstrations etc.
- Providing fund support to farm innovators by different organizations will be very helpful to cultivate and release the potentials of farmers for development of innovations.
- Giving recognition and value to farmer innovators is crucial to institutionalize them in the formal research and development system in order to contribute farming community empowerment and rural development.

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