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Association between selected independent variables of beneficiary and non-beneficiary farmers with their knowledge level about recommended package of practices of Chickpea under NFSM

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Abstract

National Food Security Mission (NFSM) is a centrally sponsored scheme started in 2007-08, with the aim of increasing the productivity of individual farmers through the change in knowledge & adoption of improved technologies and farming practices. To assess the effectiveness of the NFSM-pluses on change in the knowledge level of farmers in Rajasthan state. The study was conducted in two Agro-climatic zones of the Rajasthan state, i.e., Ic (hyper-arid partial irrigated) and zone IIIa (Semi-arid eastern plains). From these selected zones total sample size of 240 respondents were taken out of them 120 Beneficiary Farmers (BFs) and 120 Non-beneficiary Farmers (NBFs) were selected randomly from selected village. The knowledge level of both BFs & NBFs were positively and significantly correlated with variables like "farming experience and trainings, education, occupation, annual income, social participation, extension contacts, mass media exposure and economic motivation at 5% & 1% level of significance. While only two independent variables *viz*., age and size of land holding were positively and non-significantly associated with knowledge level of both beneficiary & non-beneficiary farmers about recommended package of practices of chickpea.

Keywords: NFSM, chickpea, knowledge, BFs, NBFs, association, zone Ic and IIIa.

1. Introduction

Chickpea (*Cicer arietinum* L.) is one of the most important pulse crops in India, contributing significantly to the dietary protein intake of the population and playing a vital role in sustainable agriculture through nitrogen fixation. Despite its agronomic and nutritional importance, the productivity of chickpea in India remains below its potential due to several constraints, including limited awareness and adoption of recommended production technologies among farmers. To address this gap, the Government of India launched the National Food Security Mission (NFSM**)** in 2007, which includes pulses as a major component, aiming to increase production through area expansion and productivity enhancement, particularly by promoting improved package of practices (POPs) among farmers.

The success of NFSM interventions largely depends on the knowledge and adoption behavior of farmers regarding the recommended POPs. These practices encompass a range of agronomic techniques such as timely sowing, seed treatment, use of high-yielding varieties, balanced fertilization, integrated pest management, and efficient irrigation methods. However, the level of knowledge and subsequent adoption of these practices varies significantly among farmers, influenced by a multitude of socio-economic and personal factors.

2. Methodology

The study was conducted in two Agro-climatic zones of the Rajasthan state *i.e.* Ic (Hyper arid partial irrigated) and zone IIIa (Semi-arid eastern plains). From these selected zones, Churu district from zone Ic and Ajmer district from zone IIIa was selected on the basis of maximum area and maximum number of NFSM-Chickpea beneficiaries. From each selected district 2 Panchayat Samiti were selected & 3 villages from each Panchayat Samiti were selected purposively where maximum NFSM programme conducted during last years. From prepared list, 10 Beneficiary Farmers (BFs) from each selected village were selected by using simple random sampling technique. Similarly, 10 farmers named as Non-beneficiary Farmers (NBFs) of NFSM were also selected randomly from each adjacent areas of each selected village. Thus, total 120 BFs and 120 NBFs respondents were taken for the study by making a sample size of 240 respondents.

The responses obtained from the respondents were counted and converted into mean per cent score. To find out the relationship between the selected personal variables *viz.* Age, Education, Occupation, Size of land holding, Annual

family income, Farming experience, Social Participation, Extension contact, Training received by the respondent, Mass media exposure and Economic motivation with knowledge level of beneficiary and non-beneficiary farmers of NFSM chickpea about recommended package of practices of Chickpea were measured by computing "Coefficient of correlation (r)" between their and significance was tested.

The data on a well-prepared interview schedule were collected by personal interview method by the investigator himself. The data so collected were classified, tabulated and analyzed statistically, which led to the following findings:

3. Results and Discussion

Table 1: Association between selected independent variables of BFs and NBFs farmers and their knowledge level about recommended package of practices of Chickpea (n=240)

S. No	Independent Variable	Correlation Coefficient (r)	
		r Value of BF	r Value of NBF
1.	Age	0.038^{NS}	0.151^{NS}
2.	Education	0.343**	0.181*
3.	Occupation	0.238**	0.274**
4.	Size of Land Holding	0.113^{NS}	0.088^{NS}
5.	Annual Income	0.489**	0.192*
6.	Farming Experience	0.224*	0.263**
7.	Social Participation	0.555**	0.213*
8.	Extension Contact	0.448**	0.189*
9.	Participation in Training	0.184*	0.404**
10.	Mass Media Exposure	0.256**	0.288**
11	Economic Motivation	0.380**	0.227*

* = Significant at 5 per cent ** = Significant at 1 per cent NS= Non-Significant

3.1 Age

The data incorporated in Table 1 indicated that the age has non-significant but positive correlation with knowledge level of both the beneficiary and non-beneficiary farmers about recommended package of practices of Chickpea. Hence, the null hypothesis (H_{01}) was accepted, that there is no relationship between age of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea. Hence, it may be concluded that knowledge level of beneficiary and non-beneficiary farmers was not influenced by their age. It might be due to the facts that the farmers from the different age groups were taking similar knowledge and benefits of recommended package of practices of Chickpea.

Findings of the study are in the conformity with the findings of Badhala *et al.* (2014) [6] in contradictory with Lahmo and Manhas (2021) [13].

3.2 Education

The data given in Table 1 shows that the calculated r value of beneficiary farmer's education was found 0.343 (significant at 1% level) and 0.181 (significant at 5% level) for non-beneficiary respondents. It means education of BFs and NBFs were significantly associated with the knowledge level of farmers about recommended package of practices of Chickpea. Thus, the null hypothesis (H_{02}) was rejected and alternative hypothesis was accepted which shows that there is a relationship between education of both beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. It may be concluded from the findings that knowledge level of farmers was influenced by their education level. It means farmers with higher education were having high knowledge. This might be due to the fact that educated farmers have more exposure about the innovation through literature and other communication media which might have resulted in their high knowledge level.

These findings of the study are in the conformity with the findings of Tripathi *et al.* (2006) [23], Badhala (2014) [6].

3.3 Occupation

The data incorporated in Table 1 shows that the calculated r value of occupation was 0.238 for beneficiary and 0.274 for non-beneficiary respondents which were significantly associated with the knowledge level of farmers about recommended package of practices of Chickpea at 1% level of significance. Thus, the null hypothesis (H_{03}) was rejected and alternative hypothesis was accepted, which shows that there is a relationship between occupation of beneficiary & non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. Thus, it may be concluded from the findings that knowledge level of farmers was influenced by their occupation. It might be due to the fact that there were mostly farmers depends upon agriculture + dairy as main occupation for their livelihood that they benefited by NFSM and significantly affected the knowledge possessed by them.

These findings of the study are similar with the findings of the Tripathi *et al.* (2006) [23] and Lahmo and Manhas (2021) [13], Choudhary *et al.*, (2025) [7]

3.4 Size of Land Holding

The data incorporated in Table 1 shows that size of land holding of farmers had positive but non-significant correlation with the knowledge level of beneficiary & non-beneficiary farmers about recommended package of practices of Chickpea with r value of 0.113 and 0.088, respectively. Hence, the null hypothesis (H_{04}) was accepted and alternative hypothesis was rejected which shows that there is no relationship between size of land holding of beneficiary & non-beneficiary farmers and their knowledge level. It may be concluded from the findings that size of land holding had not exerted any significant impact on the knowledge level of farmers. In the study area farmers were having big size of land holding with small land under irrigation. Because of this reason, all categories of respondents were actively involved to get more information from the relevant sources to increase the production and to minimize the constraints about improved chickpea production technology.

These findings are similar with the findings of Badhala *et al.* (2014) [6].

3.5 Annual Income

The data incorporated in Table 1 indicated that annual income of beneficiary and non-beneficiary farmers were having positive and significant correlation with the knowledge level of farmers about recommended package of practices of Chickpea with r value 0.489 and 0.255 at 1% level of significance, respectively. Hence, the null

hypothesis (H_{05}) was rejected and alternative hypothesis was accepted which shows that there is a relationship between annual income of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. It may be concluded from the findings that, knowledge level of beneficiary & non-beneficiary farmers was influenced by their annual income. It showed that higher the annual income, higher the knowledge level and vice-versa. This might be due to the fact that the high annual income of family might have helped the farmers in spending more money for acquiring knowledge of latest crop production technologies of pulses.
These results of the findings are similar with the findings of Tripathi *et al*. (2006) [23], Badhala (2014) [6].

3.6 Farming Experience
The data incorporated in Table 1 revealed that the calculated r value of farming experience was 0.224 for beneficiary and 0.200 for non-beneficiary respondents which were significantly associated at 5% level of significance with the knowledge level of farmers about recommended package of practices of Chickpea, respectively. Thus, the null hypothesis ($H_{01.6}$) was rejected and alternative hypothesis was accepted which concludes that there is a relationship between farming experience of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. It means that knowledge level of farmers was influenced by their farming experience.
These findings get support from the findings of Pokar *et al.*, (2023) [19].

3.7 Social Participation
The data incorporated in Table 1 indicate that social participation had positive and significant association with the knowledge level of farmers about recommended package of practices of Chickpea with r value 0.555 (significant at 1% level) for beneficiary and 0.291 (significant at 1% level of significance) for non-beneficiary farmers, respectively. Hence, the null hypothesis (H_{07}) was rejected and alternative hypothesis was accepted. It means that there was a relationship between social participation of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. It may be concluded from the findings that knowledge level of farmers was influenced by their social participation. This might be due to the facts that these social participations could be used to channelize and popularize the NFSM. These would help to enhance the knowledge and adoption of latest technologies of chickpea production.
These findings are similar with the findings of Tripathi *et al*. (2006) [23], Vikram (2017) [24]

3.8 Extension Contact
The data incorporated in Table 1 shows that extension contact had positive and significant correlation at 1% level of significance with r value 0.448 for beneficiary and in case of non-beneficiary farmers at 5% level with r value 0.189, respectively. Hence, the null hypothesis ($H_{01.9}$) was rejected and alternative hypothesis was accepted which concludes that there is a relationship between extension contact of beneficiary & non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. The inference may be drawn from the findings that knowledge level of farmers was influenced by their extension contact. It might be concluded that more contact of the farmers with the extension personnel improve and update the knowledge of farmers towards NFSM. This might be due to the facts that the high frequency of contact made by the farmers with extension agent and agencies enabled them to acquire more information which might have improved their knowledge and technical skills.
These findings are similar with the findings of Tripathi *et al*. (2006) [23], Meena *et al.*, (2024) [16].

3.9 Participation in Training
The data presented in Table 1 reveals that training participation had positive and significant association with the knowledge level of farmers about recommended package of practices of Chickpea at 5% level of significance with r value 0.184 for beneficiary and 0.404 at 1% level of significance for non-beneficiary farmers, respectively. Hence, the null hypothesis (H_{08}) was rejected and alternative hypothesis was accepted which shows that there is a relationship between training received by beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. This indicates that knowledge level of farmers was influenced by the training received by them. It might be due to the fact that the training received by the farmers might have helped to improve and update their knowledge of latest technologies of chickpea production
These findings are in support with the findings of Vikram (2017) [24].

3.10 Mass Media Exposure
The data incorporated in Table 1 indicated that mass media exposure had positive and significant correlation with r value 0.256 for beneficiary and 0.288 in case of non-beneficiary at 1% level of significance, respectively. Hence, the null hypothesis (H_{010}) was rejected and alternative hypothesis was accepted. It means that there is a relationship between mass media exposure of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. It may be concluded from the findings that knowledge level of farmers was influenced by their mass media exposure. The inference may be drawn that more exposure of the farmers to the mass media, more knowledge about NFSM and vice-versa.
This might be due to the facts that the high frequency of awareness of mass media made by the farmers enables them to acquire more information which might have improved their knowledge and technical skills.
These findings are in line with the findings of Kumar and Kumawat (2019).

3.11 Economic Motivation
The data incorporated in Table 1 shows that economic motivation had positive and significant correlation (at 1% level of significance) with r value of 0.480 for beneficiary and in case of non-beneficiary significant correlation (at 5% level) with r value 0.227, respectively. Hence, the null

hypothesis (H_{011}) was rejected and alternative hypothesis was accepted which shows that there is a significant relationship between economic motivation of beneficiary and non-beneficiary farmers and their knowledge level about recommended package of practices of Chickpea under NFSM. Hence, it may be concluded that the knowledge level of farmers was highly influenced by their economic motivation. It might be due to the reason that motivation of the farmers towards money and other financial means might have changed their attitude towards new extension programme which help in enhanced their knowledge.
These findings are similar with the findings of Tripathi *et al*. (2006) [23].

4. Conclusion
The knowledge level of both beneficiary & non-beneficiary farmers was positively and significantly correlated with variables like "Farming experience and Trainings, education, occupation, annual income, social participation, extension contacts, mass media exposure and economic motivation at 5% & 1% level of significance. While only two independent variable *viz*., age and size of land holding were positively and non-significantly associated with knowledge level of both beneficiary & non-beneficiary farmers about recommended package of practices of chickpea. The findings of the study indicated that the majority of the farmers are still in lack of complete knowledge resulting into medium knowledge about recommended package of practices of chickpea.

5. Recommendations
it is recommended that targeted interventions be designed to enhance the knowledge level of both beneficiary and non-beneficiary farmers regarding the recommended package of practices for chickpea cultivation under NFSM. Since variables such as education, farming experience, training, income, social participation, extension contact, mass media exposure, and economic motivation were found to be significantly associated with knowledge levels, efforts should focus on strengthening these areas through increased training programs, wider dissemination of information via mass media, and improved access to extension services. Additionally, special attention should be given to non-beneficiary farmers who still exhibit medium levels of knowledge, by organizing more inclusive and accessible awareness campaigns, demonstrations, and support services to bridge the knowledge gap and promote equitable adoption of improved chickpea production technologies.

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7. Conflict of Interest
The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

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