



International Journal of Agriculture Extension and Social Development

ISSN Print: 2618-0723
ISSN Online: 2618-0731
NAAS Rating (2026): 5.04
IJAESD 2026; 9(9): 964-967
www.extensionjournal.com
Received: 25-07-2026
Accepted: 24-08-2026
Published: 26-09-2026

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A correlation analysis between level of knowledge and profile characteristics of Cluster Front Line Demonstrations (CFLD) oil seed farmers

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DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i9m.4300>

ABSTRACT

The present study on Cluster Front Line Demonstrations (CFLD) on Oil Seeds was conducted to assess the relationship between selected characteristics and the dependent variable among beneficiaries and non-beneficiaries in Mahaboobnagar District of Telangana State. An ex-post facto research design was adopted for the study. A total of 120 respondents comprising 60 beneficiaries and 60 non-beneficiaries cultivating groundnut and castor were selected from the study area. Data were collected using a pre-tested structured interview schedule covering selected characteristics such as age, education, size of landholding, farming experience, annual income, resource availability, social participation, mass media exposure, cosmopolitanism, trainings received, risk-taking ability, economic motivation and achievement motivation. The collected data were subjected to correlation analysis to determine the nature and magnitude of association between the selected characteristics and the level of knowledge. Among beneficiaries, education, social participation, training received, risk-taking ability and achievement motivation exhibited positive and highly significant relationships. Annual income, resource availability, mass media exposure, cosmopolitanism and economic motivation showed positive and significant relationships. Among non-beneficiaries, education showed a positive and highly significant relationship, while mass media exposure, cosmopolitanism and training received exhibited positive and significant relationships. Age, landholding size and farming experience were non-significant in both groups. The findings indicate that education, information exposure and training were consistently associated with the dependent variable in both groups, while motivational, social and resource-related characteristics showed significant associations predominantly among beneficiaries.

Keywords: Beneficiaries, Non-beneficiaries, Correlation, Characteristics, Cosmopolitanism, Training, Agricultural extension

Introduction

Agriculture continues to be an important source of livelihood for a large section of the rural population. The productivity, profitability and sustainability of oil seeds cultivation is influenced not only by the availability of physical and financial resources but also by the socio-personal and socio-economic of farmers. Oil seed farmers differ considerably in their ability to access information, understand technologies, interact with extension agencies, take risks and utilize available resources. These differences may influence their participation in development programmes and their response to agricultural interventions related to oil seeds.

Agricultural development programmes are generally designed to improve farmers' knowledge, skills, resource-use efficiency, productivity and income. However, the extent to which farmers benefit from such interventions may vary depending on their individual characteristics and socio-economic circumstances. Understanding these characteristics is therefore important for designing need-based extension strategies and improving the effectiveness of development interventions.

Education is one of the important factors influencing farmers' ability to understand and utilize agricultural information. Educated farmers may have greater capacity to interpret technical recommendations, seek information from different sources and make informed decisions. Similarly, annual income and resource availability can influence farmers' ability to invest in improved technologies and undertake new agricultural practices. Social participation and cosmopolitanism provide opportunities for farmers to interact with fellow farmers, extension personnel, researchers, institutions and other information sources. Such interactions may facilitate the exchange of knowledge and experiences and expose oil seed farmers to improved agricultural technologies. Mass media exposure also plays an important role in providing timely information related to agricultural technologies, government programmes, markets and farm management practices related to oil seeds.

Training is another important extension intervention that enhances farmers' knowledge and practical skills in adoption of Oil Seeds. Regular participation in training programmes can improve farmers' understanding of recommended practices and provide opportunities for interaction with technical experts. Psychological char

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acteristics such as risk-taking ability, economic motivation and achievement motivation may also influence farmers' willingness to experiment with new practices and seek improvements in farm performance.

A comparison of beneficiaries and non-beneficiaries of CFLD oil seed farmers is useful for understanding whether the factors associated with the dependent variable differ between the two groups. Such information can assist extension agencies and development organizations in identifying important characteristics that need greater attention while planning interventions. Therefore, the present study was undertaken to determine the relationship between selected socio-personal, socio-economic and psychological characteristics and the dependent variable among beneficiaries and non-beneficiaries of CFLD Oil Seed farmers.

Materials and Methodology

The study was conducted in Nagarkurnool and Wanaparthy districts of Telangana, which were selected based on their predominance in the area under selected oilseed crops. From each district, one mandal was selected, namely Tadoor mandal from Nagarkurnool district and Kothakota mandal from Wanaparthy district. From the selected mandals, a total of six villages were selected through stratified random sampling. Three villages, namely Thummalasugur, Yathmathapoor and Parvathayapally, were selected from Tadoor mandal, while Nervin, Kanimetta and Ranipeta Thanda were selected from Kothakota mandal.

The study covered farmers associated with two selected Krishi Vigyan Kendras (KVKs), namely KVK Palem and KVK Madanapuram. A total of 120 respondents were selected for the study, comprising 60 beneficiaries who adopted Cluster Frontline Demonstrations (CFLDs) and 60 non-beneficiaries who did not adopt CFLDs. The beneficiary data obtained from ATARI, Zone-X were

used as the sampling frame for identifying and selecting the beneficiaries. Non-beneficiaries were selected from the same study area for comparison.

An ex-post facto research design was adopted for the study. The design was considered appropriate because the beneficiaries and non-beneficiaries had already been exposed to their respective existing conditions, and the researcher did not manipulate any of the independent variables. Primary data were collected from the selected respondents using a pre-tested structured interview schedule through personal interviews. Information was collected on selected socio-personal, socio-economic and psychological characteristics of the respondents and their relationship with the dependent variable. The collected data were coded, tabulated and analysed using appropriate statistical procedures. Frequencies, percentages and descriptive statistics were used to summarize the characteristics of the respondents.

To determine the relationship between the selected independent variables and the dependent variable, Pearson's product-moment correlation coefficient (r) was calculated separately for beneficiaries and non-beneficiaries.

The significance of the calculated correlation coefficients was tested at the following levels:

- 1 per cent level of significance ($p < 0.01$)
- 5 per cent level of significance ($p < 0.05$)

Correlation coefficients that did not reach either level of significance were considered non-significant (NS).

Results and Discussion

The correlation coefficients between the selected characteristics of the respondents and their level of adoption/performance of the studied intervention are presented in the table 1. The results were analysed separately for beneficiaries ($n = 60$) and non-beneficiaries ($n = 60$)

Table 1. Distribution of respondents based on their relationship between independent variables and the level of knowledge of beneficiary and non-beneficiaries on technologies of CFLDs on groundnut crop

S. No	Characteristics	Correlation Coefficient (r)	
		Beneficiaries $n = 60$	Non-beneficiaries $n = 60$
1	Age	0.168 ^{NS}	0.102 ^{NS}
2	Education	0.394 ^{**}	0.322 ^{**}
3	Size of land holding	0.235 ^{NS}	0.178 ^{NS}
4	Farming Experience	0.058 ^{NS}	0.022 ^{NS}
5	Annual Income	0.284 [*]	0.252 [*]
6	Resource Availability	0.266 [*]	0.182 ^{NS}
7	Social Participation	0.356 ^{**}	0.210 ^{NS}
8	Mass Media Exposure	0.292 [*]	0.262 [*]
9	Cosmopolitaness	0.279 [*]	0.251 [*]
10	Trainings Received	0.368 ^{**}	0.297 [*]
11	Risk Taking Ability	0.421 ^{**}	0.068 ^{NS}
12	Economic Motivation	0.314 [*]	0.046 ^{NS}
13	Achievement Motivation	0.305 [*]	0.145 ^{NS}

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability NS – Non Significant

Among the beneficiaries, education showed a positive and highly significant relationship with the dependent variable ($r = 0.394$, $p < 0.01$). Social participation ($r = 0.356$), training received ($r = 0.368$) and risk-taking ability ($r = 0.421$) also exhibited positive and highly significant relationships. Annual income ($r = 0.284$), resource availability ($r = 0.266$), mass media exposure ($r = 0.292$), cosmopolitaness ($r = 0.279$), economic motivation ($r = 0.314$) and achievement motivation ($r = 0.305$) showed positive and significant relationships ($p < 0.05$). Age ($r = 0.168$), size of landholding ($r = 0.235$) and farming experi-

ence ($r = 0.058$) were positively but non-significantly related to the dependent variable.

Among the non-beneficiaries, education ($r = 0.322$) showed a positive and highly significant relationship. Annual income ($r = 0.252$), mass media exposure ($r = 0.262$), cosmopolitaness ($r = 0.251$) and training received ($r = 0.297$) exhibited positive and significant relationships. Age ($r = 0.102$), size of landholding ($r = 0.178$), farming experience ($r = 0.022$), resource availability ($r = 0.182$), social participation ($r = 0.210$), risk-taking ability ($r = 0.068$), economic motivation ($r =$

0.046) and achievement motivation ($r = 0.145$) showed positive but non-significant relationships.

The correlation pattern indicates that most of the variables had positive relationships, although the strength and statistical significance differed between beneficiaries and non-beneficiaries.

The positive and highly significant relationship between education and the dependent variable among both beneficiaries and non-beneficiaries suggests that better-educated respondents may have greater ability to understand technical information, interpret recommendations and make informed decisions. Education may also facilitate access to written and digital sources of agricultural information.

Training received was positively and significantly associated with the dependent variable among both groups. The relationship was relatively stronger among beneficiaries ($r = 0.368$) than non-beneficiaries ($r = 0.297$). This may be because training provides respondents with technical knowledge, practical skills and greater confidence in applying recommended practices. Beneficiaries who received more training opportunities may therefore have been better equipped to utilize the intervention.

Annual income also showed a significant positive relationship in both groups. Respondents with higher income may have greater capacity to invest in improved agricultural practices and bear the initial costs associated with adopting new technologies or enterprises. Similarly, mass media exposure and cosmopolitanism were positively and significantly associated with the dependent variable in both groups. Greater exposure to television, newspapers, mobile phones, internet and other communication channels may increase access to agricultural information, while greater interaction with people and institutions outside the immediate locality may expose farmers to new ideas and practices.

Among beneficiaries, social participation showed a positive and highly significant relationship ($r = 0.356$), whereas the relationship was non-significant among non-beneficiaries ($r = 0.210$). Participation in farmer organizations, cooperatives, self-help groups

and other social institutions can provide opportunities for information sharing, interaction with extension personnel and peer learning. The stronger association among beneficiaries may indicate that social interaction played a more prominent role in their engagement with the intervention.

Risk-taking ability recorded the highest positive correlation among beneficiaries ($r = 0.421$), and the relationship was highly significant. This indicates that beneficiaries with greater willingness to take calculated risks tended to have higher levels of the dependent variable. In contrast, risk-taking ability among non-beneficiaries was very weak and non-significant ($r = 0.068$). The difference between the two groups may be associated with the opportunities and support available to beneficiaries, which could have provided greater confidence to experiment with or adopt recommended practices.

Similarly, economic motivation ($r = 0.314$) and achievement motivation ($r = 0.305$) were positively and significantly related to the dependent variable among beneficiaries. However, these relationships were non-significant among non-beneficiaries. This suggests that economically and achievement-oriented beneficiaries may have been more interested in improving productivity, income and overall farm performance.

Resource availability showed a significant positive relationship among beneficiaries ($r = 0.266$), but a non-significant relationship among non-beneficiaries ($r = 0.182$). Adequate access to farm resources may facilitate the implementation of recommended practices and enable beneficiaries to make better use of available opportunities. On the other hand, age, size of landholding and farming experience did not show significant relationships in either group. Although all three variables had positive correlation coefficients, their associations were not statistically significant. This indicates that differences in age, landholding size and years of farming experience alone may not sufficiently explain variation in the dependent variable in the present study.

Table 2. Distribution of respondents based on their relationship between independent variables and the level of knowledge of beneficiary and non-beneficiaries on technologies of CFLDs on castor crop

S. No	Characteristics	Correlation Coefficient (r)	
		Beneficiaries $n = 60$	Non-beneficiaries $n = 60$
1	Age	0.155 ^{NS}	0.095 ^{NS}
2	Education	0.376 ^{**}	0.334 ^{**}
3	Size of land holding	0.216 ^{NS}	0.167 ^{NS}
4	Farming Experience	0.043 ^{NS}	0.029 ^{NS}
5	Annual Income	0.273	0.233 ^{NS}
6	Resource Availability	0.288 [*]	0.176 ^{NS}
7	Social Participation	0.331 ^{**}	0.193 ^{NS}
8	Mass Media Exposure	0.284 [*]	0.253 [*]
9	Cosmopolitanism	0.266 [*]	0.259 [*]
10	Trainings Received	0.359 ^{**}	0.263 [*]
11	Risk Taking Ability	0.377 ^{**}	0.053 ^{NS}
12	Economic Motivation	0.328 [*]	0.088 ^{NS}
13	Achievement Motivation	0.313 ^{**}	0.153 ^{NS}

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability NS – Non Significant

Among the beneficiaries, education showed a positive and highly significant relationship with the dependent variable ($r = 0.376$, $p < 0.01$). Social participation ($r = 0.331$), training received ($r = 0.359$), risk-taking ability ($r = 0.377$) and achievement motivation ($r = 0.313$) also exhibited positive and highly significant relationships.

Annual income ($r = 0.273$), resource availability ($r = 0.288$), mass media exposure ($r = 0.284$), cosmopolitanism ($r = 0.266$) and economic motivation ($r = 0.328$) showed positive and significant relationships. Age ($r = 0.155$), size of landholding ($r = 0.216$) and farm-

ing experience ($r = 0.043$) showed positive but non-significant relationships.

Among the non-beneficiaries, education had a positive and highly significant relationship ($r = 0.334$, $p < 0.01$). Mass media exposure ($r = 0.253$), cosmopolitanism ($r = 0.259$) and training received ($r = 0.263$) showed positive and significant relationships. Age ($r = 0.095$), size of landholding ($r = 0.167$), farming experience ($r = 0.029$), resource availability ($r = 0.176$), social participation ($r = 0.193$), risk-taking

ability ($r = 0.053$), economic motivation ($r = 0.088$) and achievement motivation ($r = 0.153$) were positive but non-significant.

Overall, the results indicate that the significant associations were more numerous among beneficiaries than non-beneficiaries.

The positive and highly significant association of education with the dependent variable among both beneficiaries and non-beneficiaries suggests that education may facilitate better understanding of agricultural information, improved decision-making and greater ability to comprehend and apply recommended practices. The relatively higher correlation among beneficiaries ($r = 0.376$) compared with non-beneficiaries ($r = 0.334$) indicates a somewhat stronger association in the beneficiary group.

Training received exhibited a positive and highly significant relationship among beneficiaries ($r = 0.359$) and a positive significant relationship among non-beneficiaries ($r = 0.263$). Training provides farmers with technical knowledge, practical skills and opportunities for interaction with extension personnel. The stronger relationship among beneficiaries may be associated with greater exposure to intervention-related training and capacity-building activities.

Risk-taking ability recorded a positive and highly significant relationship among beneficiaries ($r = 0.377$), whereas it showed a very weak and non-significant relationship among non-beneficiaries ($r = 0.053$). This difference suggests that willingness to take calculated risks was more closely associated with the dependent variable among beneficiaries. Beneficiaries who were more willing to try new practices may have been more responsive to available opportunities.

Social participation was positively and highly significantly associated with the dependent variable among beneficiaries ($r = 0.331$), while the relationship among non-beneficiaries was non-significant ($r = 0.193$). Participation in farmer groups, cooperatives and other social organizations can provide opportunities for information exchange, peer learning and interaction with extension agencies, which may contribute to greater exposure to improved practices.

Economic motivation also showed a positive and significant relationship among beneficiaries ($r = 0.328$), but a non-significant relationship among non-beneficiaries ($r = 0.088$). Similarly, achievement motivation was positively and highly significantly associated among beneficiaries ($r = 0.313$), whereas it was non-significant among non-beneficiaries ($r = 0.153$). This indicates that economically and achievement-oriented respondents among beneficiaries tended to have higher levels of the dependent variable.

Resource availability showed a positive and significant relationship among beneficiaries ($r = 0.288$), but was non-significant among non-beneficiaries ($r = 0.176$). Availability of farm resources may facilitate the implementation of recommended agricultural practices and allow farmers to utilize opportunities associated with the intervention.

Mass media exposure showed positive and significant relationships among both beneficiaries ($r = 0.284$) and non-beneficiaries ($r = 0.253$). Similarly, cosmopolitanism had significant positive relationships among beneficiaries ($r = 0.266$) and non-beneficiaries ($r = 0.259$). Exposure to mass media and interaction beyond the immediate locality can provide farmers with information about improved technologies, government programmes, markets and successful farming practices.

Annual income showed a positive relationship among beneficiaries ($r = 0.273$), whereas the relationship among non-beneficiaries was positive but non-significant ($r = 0.233$ NS). Higher-income farmers may have relatively greater capacity to invest in improved practices, inputs and complementary farm enterprises. However, the association observed in this study should not be interpreted as a causal effect.

In contrast, age, size of landholding and farming experience showed positive but non-significant relationships in both groups. This indicates that these characteristics were not significantly associated with variations in the dependent variable in the present study.

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How to cite this article: Akanksha B, Prashanth P, Kote P. A correlation analysis between level of knowledge and profile characteristics of Cluster Front Line Demonstrations (CFLD) oil seed farmers. *International Journal of Agriculture Extension and Social Development*. 2026;9(9):964-967. doi: <https://www.doi.org/10.33545/26180723.2026.v9.i9m.4300>