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Relationship between socio-economic profile and knowledge of farmers regarding agro-met advisory services in Banaskantha District

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Abstract

The study was carried out in the Banaskantha district of Gujarat during 2025 to assess the relationship between socio-economic profile and knowledge level of farmers regarding Agro-Met Advisory Services (AAS). Banaskantha district experiences significant climate and weather variability, profoundly impacting its agricultural practices. This region is characterised by semi-arid conditions, making it susceptible to both drought and sporadic heavy rainfall. The study was confined to an "*Ex-post-facto*" research design. A multistage random sampling technique was used to select representative respondents for the present investigation. Banaskantha district in two talukas was randomly selected, and in each selected taluka, five villages were selected randomly. From each of the selected villages, fifteen farmers were selected randomly to make the sample size of 150 farmers. Banaskantha district farmers had a medium to high level of knowledge with respect to age, education, landholding, social participation, source of information, extension participation, risk orientation, and scientific orientation. These findings that positive, with highly significant and farming experience, cropping pattern observed positively with significance. Other variables like annual income and occupation revealed positive but non-significant results. These relationships indicate the need to enhance efforts for increasing the practical use of advisory services in this research area.

Keywords: Agro-met advisory services, mobile agro-advisory services, relationship of farmers' knowledge.

Introduction

Agriculture in India continues to play a vital role in the nation's economy. Despite ongoing structural transformation towards industry and services, agriculture remains the primary source of livelihood for over half of India's rural population. However, the sector faces increasing threats from climate change, which has emerged as one of the most pressing global and national challenges affecting food security, rural incomes and ecosystem stability. The issue of human-induced climate change came into the global spotlight with the establishment of the Intergovernmental Panel on Climate Change (IPCC). Since then, mounting scientific evidence has highlighted that the pace and extent of warming across India are both significant and widespread. Recent reports from the India Meteorological Department (IMD) indicate that mean surface temperatures in India have increased by approximately 0.7°C from 1901 to 2018, with more pronounced warming in the last two decades. In Gujarat, particularly in the north-western districts such as Banaskantha, rising temperatures between 1.1°C to 1.3°C over the past five decades have been observed. In addition, rainfall patterns have become erratic, with a decline in rainy days, even though instances of heavy rainfall and floods have become more frequent.

In this context, the Government of India, through the Garmin Krishi Mausam Sewa (GKMS) under the Ministry of Earth Sciences, has launched a series of initiatives to strengthen Agro-Meteorological Advisory Services (AAS). These advisories are developed by Agro-Met Field Units (AMFUs) located at Krishi Vigyan Kendras (KVKs) and agricultural universities, in collaboration with IMD and ICAR. The services aim to provide weather-based farm advisories that include recommendations on irrigation scheduling, pest and disease management, fertiliser application and harvesting operations, tailored to local climatic conditions. By 2025, GKMS has made significant progress across the country, reaching more than 4 crore farmers through various communication channels, including SMS alerts, WhatsApp groups, voice calls via Kisan Call Centres, television, radio broadcasts and mobile applications.

In Banaskantha district, the dissemination of such advisories has increased, yet challenges persist in terms of awareness, comprehension and practical adoption of the information among farmers. In conclusion, the increasing variability of climate in Banaskantha district underscores the importance

of science-backed, location-specific agro-advisories for sustainable and risk-resilient farming. Enhancing the reach, reliability and relevance of these advisories through better technology integration and farmer engagement will be key to safeguarding agricultural productivity and rural livelihoods in the face of climate change.

Objectives

To study the relationship between the profile of farmers and their knowledge about agro-met advisory services

Methodology

The present study was confirmed to "*Ex-post facto*" research design as the independent variables were already operational in the study area. A multistage random sampling technique was used for the selection of taluka, villages and farmers. The present investigation was carried out in the Banaskantha district of Gujarat state was randomly selected, where the Agro-meteorology department is giving agro-met advisory services for farmers. Among the fourteen talukas of Banaskantha district, Tharad and Dantiwada talukas were randomly selected, and from each selected taluka, five villages were selected purposively based on farmers using agro-met advisory services for the study. A total of 150 farmers were selected randomly for the study. The independent variables were measured with the help of a scale developed by past researchers, as well as structured schedules that were designed for the purpose. The association between dependents and the independent variable was measured with the help of the correlation coefficient. The data were collected by personal contact method, and the collected data were classified, tabulated and analysed in light of the objectives and in order to make the findings meaningful for drawing meaningful interpretation. The statistical tools such as frequency, percentage, mean, standard deviation and coefficient of correlation were used.

Results and Discussion

Keeping in view the objectives of the study, the relevant variables were selected on the basis of an extensive review of literature related to the study, in consultation with the major advisor and a member of the advisory committee. Only those variables that were found most important to the present investigation were finally selected.

Table 1: Relationship between the profile of farmers and their knowledge about agro- met advisory services (n= 150)

Sr. No.	Independent Variables	Coefficient of correlation (r)
1	Age	0.252**
2	Education	0.330**
3	Farming experience	0.167*
4	Land holding	0.220**
5	Annual income	0.122NS
6	Occupation	0.110NS
7	Source of information	0.268**
8	Social participation	0.266**
9	Extension participation	0.421**
10	Risk orientation	0.556**
11	Scientific orientation	0.227**
12	Cropping pattern	0.182*

**Significant at 0.01 level of probability
*Significant at 0.05 level of probability
NS Non-significant

The data manifested in Table 1 revealed that the age of the farmers had a positive and highly significant relationship (r = 0.252**) with their knowledge about agro-met advisory services. It can be concluded that the age of farmers had a positive and highly significant association with knowledge. It indicates that as age increases, knowledge levels tend to increase as well. The similar findings have been reported by Chouhan *et al*. (2018) [2]. Education of the farmers had a positive and highly significant relationship (r = 0.330**) with their knowledge about agro-met advisory services. Farmers with a high level of education had higher knowledge than farmers with a relatively low level of education. Education plays a key role in shaping the knowledge, skill and attitude of a person. Knowledge farmers are generally keen to know new technologies with the science involved in it. The similar findings have been reported by Dilip (2021) [3].

The farming experience of the farmers had a positive and significant relationship (r = 0.167*) with their knowledge about agro-met advisory services. Farmers with more years of experience are likely to have faced diverse climatic conditions and challenges, which makes them more curious and open to scientific weather-based guidance. The similar findings have been reported by Raval *et al*. (2023) [4]. Land holding of the farmers had a positive and highly significant relationship (r = 0.220**) with their knowledge about agro-met advisory services. The land holding of the farmers is a major means of their occupation. Hence, with respect to their land holding, they tried to get more economic return as land is an important and basic resource of farming. The similar findings have been reported by Chouhan *et al*. (2018) [2].

Occupation of the farmers had a positive and no significant correlation (r = 0.110NS) with their knowledge about agro-met advisory services. Occupation showed a non-significant relationship with knowledge regarding agro-met advisory services among farmers. This might be because many farmers were engaged in multiple occupations besides farming, which may reduce their focus or involvement in agricultural advisory services, leading to lower knowledge levels. The similar findings have been reported by Dilip (2021) [3]. The source of information of the farmers had a positive and highly significant relationship (r = 0.268**) with their knowledge about agro-met advisory services. the probable reason might be that an individual gains variety and more amount of knowledge if he has an opportunity to be exposed to a greater number of sources of information. Farmers who used more sources of information had higher exposure and enriched their level of knowledge. This finding conforms with the finding of Chaudhary *et al*. (2024) [1].

Social participation of the farmers had a positive and highly significant relationship (r = 0.266**) with their knowledge about agro-met advisory services. The farmers are actively engaged in community-based organisations, cooperatives, farmers' associations and extension events, which serve as effective platforms for the dissemination of agro-met advisories. The similar findings have been reported by Kumbhani *et al*. (2023) [6]. Extension participation of the farmers had a positive and highly significant relationship (r = 0.421**) with their knowledge about agro-met advisory services. The high level of participation in extension

activities reflects a high level of inquisitiveness to know more and more about innovation, and such inquisitiveness gives the chance to learn more. During the course of interaction and discussion with extension personnel, the farmers exposed themselves to various knowledge practices. The similar findings have been reported by Dilip (2021) [3].

It is concluded that the risk orientation of the farmers had a positive and highly significant relationship ($r = 0.556^{**}$) with their knowledge about agro-met advisory services. Risk oriented farmers are generally more proactive, experimental and open to adopting modern agricultural practices. Their willingness to face uncertainty motivates them to gather relevant and timely information to minimise potential losses and enhance productivity. This result is in assent with Wagh (2016) [5] and Dilip (2021) [3]. Scientific orientation of the farmers ($r = 0.227^{**}$) had a positive and highly significant relationship, and farmers with higher scientific orientation are more likely to seek, understand and adopt agro-advisory information effectively. Their inclination towards rational thinking and openness to scientific methods likely enhances their awareness and understanding of agro-met advisory services. This finding conforms with the finding of Chaudhary *et al*. (2024) [1].

The cropping pattern of the farmers had a positive and significant relationship ($r = 0.182^{*}$) with their knowledge about agro-met advisory services. This might have happened because intensive cropping patterns utilise all resources effectively, which leads to increased profits from agriculture and motivates people to adopt the recommended practices. This finding is in conformity with the findings of Kumbhani *et al.* (2023) [6].

Conclusion

Among the personal, social, economic, communicational and psychological, situational variables, *viz.*, eight variables *viz*., age, education, land holding, social participation, source of information, extension participation, risk orientation, and scientific orientation, had positive and highly significant correlation with knowledge of the farmers regarding agro-met advisory services.

Two variables, *viz*., farming experience and cropping pattern, had a positive and significant correlation with the knowledge of the farmers. Two variables, *viz*., annual income and occupation positive and non-significant correlation with knowledge of the farmers regarding agro-met advisory services.

Implications of the study

1. The results of this study underline the importance of strengthening educational efforts, improving access to information and ensuring localised dissemination of agro-met advisories.
2. The results can be utilised by policymakers, NGOs and extension agencies, administrators, and researchers for strengthening the extension services.
3. These steps can significantly enhance both the knowledge and adoption levels of farmers, leading to more informed and climate-resilient agricultural practices.

Conflict of Interest

No conflict of interest among researchers.

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