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## Perspectives of Small and Marginal Farmers on the Soil Health Card Scheme: A Study of Kurukshetra District of Haryana

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### Abstract

The Soil Health Card Scheme (SHCS) was launched by Indian Government in the year 2015 with an aim to promote sustainable agriculture. Under this scheme a detailed report card on soil health has been issued to concern farmers about the nutrition status of their plot soil along with crop-specific fertilizer recommendations. The present study was conducted to know about the point of view of small and marginal farmers regarding soil health card scheme. The study was based on primary data and a descriptive research design was adopted. Data were collected through interview schedule. Total 60 small and marginal farmers from three blocks of Kurukshetra district of Haryana were contacted. Random sampling was used while selecting the blocks. For this study, farmers were selected purposively who were involved in cultivation process and had thorough understanding of agricultural processes. The findings of the study reveal that out of total farmers 70 percent were small and 30 percent were marginal. And 63.3% farmers were aware of the SHCS, only a small fraction possessed adequate knowledge of the scheme's benefits and application. Implementation gaps were evident, with 50% reporting that although soil samples were collected, no report or card was issued. Further, 53.3% of respondents expressed complete dissatisfaction with the scheme due to delayed services, lack of guidance, and poor follow-up. On the basis of findings of the study key suggestions included awareness generation, regular soil testing, timely delivery of cards, simplification of card content, proper guidance, and frequently follow-ups should be done. From the study it can be concluded that despite of the scheme's potential; its impact remains limited due to inadequate execution and farmer engagement. Enhanced communication, accountability, and field-level support are essential for realizing the intended benefits of the SHCS.

**Keywords:** Soil Health Card, Fertilizer, Farmers, Guidance, Awareness

### Introduction

As per the projections of World Bank, the world's population will reach nearly 10 billion by 2050 and to provide food to this growing population is a major concern. Now a days, food security has been a challenge for the governments globally. The rising population intensifies pressure on natural resources particularly on land and soil, which are fundamental to agricultural productivity. In India, agriculture is the backbone of the economy and soil health plays a crucial role in sustaining crop yields. However, the overuse and imbalanced application of chemical fertilizers have led to a steady degradation of soil quality. Indian farmers, in their pursuit of higher yields, often rely excessively on nitrogen-based fertilizers such as urea while neglecting other essential nutrients like phosphorus and potassium. This imbalance has resulted in nutrient depletion, deteriorating soil structure, and declining organic matter. While chemical fertilizers provide short-term productivity gains, they disrupt natural nutrient cycling and increase the land's dependency on external inputs, thereby undermining long-term agricultural sustainability. Another major concern is the alteration of soil pH due to continuous use of certain fertilizers. For instance, ammonium-based fertilizers contribute to soil acidification in northeastern India, while regions like Punjab and Haryana experience increasing soil alkalinity due to inappropriate fertilization practices. These pH imbalances reduce nutrient availability, adversely impacting crop productivity. Furthermore, the overuse of fertilizers diminishes soil microbial activity, essential for nutrient conversion and maintaining soil structure. This weakens the soil's resilience and fertility.

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Long-term chemical fertilizer use without organic supplementation also leads to soil compaction, reducing its ability to retain water and air. In addition to harming soil health, excessive fertilizer use causes environmental problems, such as nitrate leaching into groundwater, which poses health risks like methemoglobinemia or "blue baby syndrome." The problem in India is further compounded by policy challenges, particularly the skewed subsidy structure favoring urea, which encourages its overuse. According to the *Annual Review of Fertilizer Production and Consumption 2023-24*, fertilizer use per hectare rose from 136.2 kg in 2022-23 to 139.8 kg in 2023-24. In Haryana alone, fertilizer consumption increased by 5.9%, from 1.357 million MT to 1.437 million MT during the same period. Most farmers apply fertilizers without proper knowledge of their soil's requirements, largely due to lack of awareness and inadequate access to soil testing facilities. To address these issues, the Government of India launched the Soil Health Card (SHC) Scheme on February 19, 2015, inaugurated by Prime Minister Shri Narendra Modi at Suratgarh, Rajasthan. The primary aim of the scheme is to provide farmers with field-specific soil analysis reports containing crop-wise fertilizer recommendations. The SHC offers data on 12 parameters, including macro-nutrients (N, P, K), secondary nutrients (S), micro-nutrients (Zn, Fe, Cu, Mn, Bo), and physical parameters (pH, EC, and organic carbon). Although the SHC scheme is designed at the national level, its success depends heavily on grassroots implementation and farmer participation. To understand the on-ground realities, the present study was conducted in Kurukshetra district of Haryana. The aim of the study was to assess the awareness, knowledge, adoption and satisfaction level among small and marginal farmers about soil health card scheme. Also, explore the problems and coping mechanisms associated with this Scheme.

### Review of Related Literature

Several studies have explored the effectiveness of the SHC Scheme across India. Despite a growing body of literature, region-specific and farmer-specific insights remain limited, justifying the need for this primary data-based study.

Patel *et al.* (2017) <sup>[7]</sup> conducted a study titled "*Awareness and Knowledge Regarding Soil Testing and Utility Perception of Soil Health Card*" in Petlad Taluka of Anand district, Gujarat, to assess farmers' knowledge and perceptions regarding soil testing and the Soil Health Card (SHC) scheme. Using a sample of 100 SHC-holding farmers and structured personal interviews conducted in Gujarati, the study found that family size and occupation significantly influenced SHC adoption, whereas age, landholding, and income did not. About 52% of respondents demonstrated high to very high knowledge of soil testing, and many used the SHC to optimize fertilizer use, reduce input costs, and maintain soil health. Educational awareness and proximity to soil testing facilities were identified as key enablers. However, the study was limited to one taluka, focused only on SHC holders, and did not explore reasons why some eligible farmers had not adopted or were reluctant to use the technology. Kaur *et al.* (2020) <sup>[13]</sup> conducted a study titled "*Farmers' Knowledge of Soil Health Card and Constraints in its Use*" to investigate farmers' knowledge and the challenges faced in using Soil Health Cards under the SHC Scheme in the Jalandhar and Sangrur districts of Punjab. The study included 80 randomly selected SHC beneficiaries

associated with KVKs in Noormahal and Kheri. Using structured interviews and a knowledge test, the study found that most farmers had a medium level of knowledge regarding SHC application, particularly in soil sampling methods and nutrient information. Key constraints included difficulties accessing the SHC portal, delays in SHC distribution, and the absence of mobile soil testing vans. Although the study focused on knowledge and constraints, it provided limited insight into the influence of socio-economic factors or the role of extension services.

Abhishek *et al.* (2019) <sup>[14]</sup> conducted a study titled "*Impact of Soil Health Card Scheme on Paddy Farmers' Income in North Eastern Karnataka*" to analyze the impact of the SHC scheme on the income of paddy farmers in the Raichur district. Based on primary data from 40 randomly selected farmers (20 SHC users and 20 non-users), the study found that SHC users had lower cultivation costs (₹92,307/ha) compared to non-users (₹95,219/ha), achieved higher yields (75.34 qtl/ha vs. 71.05 qtl/ha), and enjoyed better benefit-cost ratios (1.58 vs. 1.45). While the findings suggest positive effects of SHC use on productivity and profitability, the small sample size and limited geographic scope restrict the generalizability of the results.

Chaudhary (2019) <sup>[8]</sup> conducted a study titled "*The Prospects and Challenges of Soil Health Card Scheme*" to examine awareness and constraints related to the SHC scheme in the Bikaner and Hanumangarh districts of Rajasthan. The study found low awareness among both beneficiary and non-beneficiary farmers. The most prevalent issue among non-beneficiaries was a lack of awareness, which hindered SHC adoption. Lack of interest was the second most common constraint, with some farmers stating that soil testing was unnecessary for their fields. Among beneficiaries, key issues included inadequate soil testing facilities, procedural complexity, and limited laboratory infrastructure. However, the use of non-random sampling and the study's restriction to two districts limit the generalizability of its findings.

Charel (2018) <sup>[9]</sup> conducted a study titled "*Perception of Farmers about the Soil Health Card*" to assess farmers' perceptions of the SHC in the Navsari district of South Gujarat, using data from 120 respondents. The majority (70.83%) had a moderate level of perception, significantly influenced by factors such as education, social participation, income, and access to information. Higher annual income positively impacted education, which in turn influenced SHC perception. Conversely, age, mass media exposure, risk orientation, and farming experience had a negative and non-significant relationship with farmers' perceptions of SHC. Although the study measured correlations with socio-economic variables, it did not assess the effectiveness or limitations of extension services and institutional support in improving SHC awareness and perception. Its limited geographic focus also restricts the broader applicability of the findings. The reviewed studies collectively examine key aspects of the Soil Health Card (SHC) Scheme, such as farmers' awareness, knowledge, perception, adoption constraints, and its impact on agricultural productivity. Patel *et al.* (2017), Kaur *et al.* (2020), and Charel (2018) <sup>[7, 12, 9]</sup> in their studies reported moderate to high levels of awareness and knowledge among beneficiaries. However, Chaudhary (2019) <sup>[8]</sup> notes critically low awareness among non-beneficiaries. Educational attainment, access to soil testing facilities and extension services were found significant

factors influencing SHC adoption. Methodologically, the studies differ: Abhishek *et al.* (2019) <sup>[14]</sup> conducted a comparative impact analysis showing measurable benefits like increased yields, while others focused on perception-based assessments using descriptive statistics and correlation methods. Geographic limitations and varying sampling techniques—random in Kaur *et al.*, non-random in Chaudhary—affect the generalizability and reliability of findings. Infrastructural and institutional barriers are commonly noted but explored to varying extents. Overall, while the SHC scheme is widely viewed as beneficial for soil and crop management, these studies reveal disparities in implementation, effectiveness, and research depth across different regions.

**Rationale of the Study:** Agriculture is the backbone of the Indian economy, particularly in rural states like Haryana, where a large proportion of the population depends on farming for livelihood. In India, majority of farmers are small and marginal farmers, who own less than two hectares of land. These farmers face several challenges, including declining soil fertility, high input costs, and limited access to modern agricultural technologies. In response to soil degradation and inefficient fertilizer usage, the Government of India launched the Soil Health Card (SHC) Scheme in 2015 to promote judicious use of fertilizers based on scientific soil testing. Despite the scheme's national scope, its success largely depends on awareness, understanding, and adoption by small and marginal farmers, who are most vulnerable to the consequences of poor soil health.

Understanding their perspectives is vital for improving SHCS implementation, ensuring inclusivity, and designing need-based interventions for sustainable agriculture.

### Method & Approach

The present study employed a descriptive research design and was based on primary data. Data were collected from 60 small and marginal farmers across three blocks i.e. Thanesar, Pehowa and Shahbad of Kurukshetra district. Out of seven blocks, these three blocks were selected randomly to ensure representative coverage of the district. Data were collected through an interview schedule. For this study, a small farmer was defined as one who owned land between 1 to 2 hectares (2.5 to 5 acres), while a marginal farmer was defined as one who owned less than 1 hectare (2.5 acres) of land. The interview schedule included questions on the socio-economic profile of the respondents as well as their perspectives on the Soil Health Card Scheme. The data were analyzed using SPSS software, and the results were presented in the form of numbers and simple percentages.

### Results and Discussion

The socio-economic profile of small and marginal farmers is essential for understanding their agricultural decisions and challenges. Factors like age, education, landholding size, income, and family structure influence their ability to adopt new practices and benefit from government schemes. As per the findings of study the socio-economic background of small and marginal farmers of Kurukshetra district are as follows:

**Table 1:** Distribution of respondents as per socio-economic conditions

| Name of Variable           | Category or Sub-Category  | Number | Percentage (%) |
|----------------------------|---------------------------|--------|----------------|
| Sex                        | Male                      | 58     | 96.7           |
|                            | Female                    | 2      | 3.3            |
|                            | Total                     | 60     | 100.0          |
| Age                        | Up to 20 years            | -      | -              |
|                            | 20-30 years               | 6      | 10.0           |
|                            | 30-40 years               | 14     | 23.3           |
|                            | 40-50 years               | 18     | 30.0           |
|                            | Above 50 years            | 22     | 36.7           |
|                            | Total                     | 60     | 100.0          |
| Educational Qualification  | Illiterate                | 8      | 13.3           |
|                            | Primary level             | 14     | 23.3           |
|                            | Middle level              | 2      | 3.3            |
|                            | Matriculation             | 10     | 16.7           |
|                            | Senior-Secondary          | 14     | 23.3           |
|                            | Graduation                | 10     | 16.7           |
|                            | Post-graduation and above | 2      | 3.3            |
|                            | Total                     | 60     | 100.0          |
| Social Category            | BC                        | 20     | 33.3           |
|                            | General                   | 40     | 66.7           |
|                            | SC                        | -      | -              |
|                            | EWS                       | -      | -              |
|                            | Total                     | 60     | 100.0          |
| Marital status             | Married                   | 58     | 96.7           |
|                            | Unmarried                 | 2      | 3.3            |
|                            | Total                     | 60     | 100.0          |
| Religion                   | Hindu                     | 58     | 96.7           |
|                            | Sikh                      | 2      | 3.3            |
|                            | Total                     | 60     | 100.0          |
| Type of family             | Nuclear family            | 24     | 40.0           |
|                            | Joint family              | 34     | 56.7           |
|                            | Extended family           | 2      | 3.3            |
|                            | Total                     | 60     | 100.0          |
| Annual Respondents' Income | Up to 2 lakhs             | 24     | 40.0           |

|                      |   |    |       |
|----------------------|---|----|-------|
|                      | 2 to 4 lakhs                              | 08 | 13.3  |
|                      | 4 to 5 lakhs                              | 02 | 3.3   |
|                      | No income from farming                    | 12 | 20.0  |
|                      | Not disclosed                             | 14 | 23.3  |
|                      | Total                                     | 60 | 100.0 |
| Annual Family Income | Up to 2 lakhs                             | 14 | 23.3  |
|                      | No family income, dependent on respondent | 26 | 43.3  |
|                      | Not disclosed                             | 20 | 33.33 |
|                      | Total                                     | 60 | 100.0 |
| Type of House        | Semi-pucca                                | 8  | 13.3  |
|                      | Pucca                                     | 52 | 86.7  |
|                      | Total                                     | 60 | 100.0 |
| Urban Accommodation  | In City/Town                              | -  | 00.0  |
| Rural Accommodation  | In Village                                | 56 | 93.3  |
|                      | In Fields                                 | 4  | 6.7   |
|                      | Total                                     | 60 | 100.0 |
| Category of farmer   | Marginal                                  | 18 | 30.0  |
|                      | Small                                     | 42 | 70.0  |
|                      | Total                                     | 60 | 100.0 |

Source: Field Survey 2022

The table no. 1 above clearly indicates that among total respondents 96.7% were male and only 3.3% female. It shows that men are more involved in landholding and farming activities rather than women. Females have limited participation in formal agricultural schemes. In terms of age, most farmers were primarily middle-aged or older, with the largest group being above 50 years (36.7%), followed by those aged 40-50 years (30%), 30-40 years (23.3%), and 20-30 years (10%), with no respondents under 20. This points toward an ageing farming population with an extensive experience. Also, the ageing factor may impact openness to new practices and schemes like SHCS. The educational attainment varied, with most having completed either primary or senior-secondary education (both 23.3%), while others had matriculation or graduation (each 16.7%), a small proportion were postgraduates (3.3%), and 13.3% were illiterate. In total 43.3% respondents have passed senior secondary or above level education. The majority of respondents belonged to the General category (66.7%), followed by Backward Classes (BC) at 33.3%. No respondents identified as Scheduled Caste (SC) or Economically Weaker Section (EWS), which may reflect sampling biases or failure of land reforms in study area. The study reported that 96.7% farmers were married and only 3.3% were unmarried. In terms of religion, 96.7% respondents were Hindu and 3.3% Sikh, reflecting Hinduism was the dominant religion in Kurukshetra district. Above fifty percent S&M farmers are tied in strong

traditional family structures. Because 56.7% respondents lived in joint families, followed by nuclear (40%) and extended families (3.3%). About 40% of respondents reported an annual income up to ₹2 lakhs, while 20% had no income from farming. Similarly, 43.3% of families were fully dependent on the respondent's income. A notable portion of both individual (23.3%) and family (33.3%) income data was not disclosed, which may reflect discomfort, lack of accurate records, or suspicion towards formal surveys. Regarding housing, 86.7% resided in pucca houses and 13.3% in semi-pucca houses, indicating generally stable living conditions. All participants were from rural areas, with 93.3% living within village boundaries and 6.7% in field areas, further emphasizing the rural nature of the study population. According to landholding size, out of 60 respondents 70% belong to the small farmer category (owning between 1 to 2 hectares of land), while 30% are marginal farmers (owning less than 1 hectare). This distribution indicates that the study sample is dominated by small farmers. The main objective of this study was to know about the perspectives of small and marginal farmers about the Soil Health Card Scheme. To fulfill this objective researcher asked various questions related to the scheme such as awareness about scheme, knowledge level, impact of the scheme, problems associated with the scheme, coping mechanisms used and satisfaction level. The findings of which are as following:

**Table 2:** Distribution of respondents as per awareness, source of information and knowledge about the Soil Health Card Scheme

| Name of Variable      | Category or Sub-Category | Number | Percentage (%) |
|-----------------------|--------------------------|--------|----------------|
| Awareness             | Yes                      | 38     | 63.3           |
|                       | No                       | 22     | 36.7           |
|                       | Total                    | 60     | 100.0          |
| Source of Information | Other farmers            | 4      | 6.7            |
|                       | ADOs/KVKs Officials      | 30     | 50.0           |
|                       | Newspaper/TV/Radio       | 4      | 6.7            |
|                       | Not Aware about Scheme   | 22     | 36.7           |
|                       | Total                    | 60     | 100.0          |
| Knowledge Level       | Very low                 | 32     | 53.3           |
|                       | Low                      | 2      | 3.3            |
|                       | Moderate                 | 4      | 6.7            |
|                       | Not Aware about Scheme   | 22     | 36.7           |
|                       | Total                    | 60     | 100.0          |

Source: Field Survey 2022



The findings reveal that 63.3% of the respondents reported being aware of the SHCS, while a significant 36.7% had no awareness of the scheme at all. This indicates a moderate level of scheme penetration in the study area. Despite Haryana's status as a progressive agricultural state, a notable proportion of small and marginal farmers remain uninformed about a key government initiative intended to support their sustainability and productivity. This gap in awareness points to limitations in outreach and information dissemination at the grassroots level. Among those who were aware of the scheme, the most common source of information was Agricultural Development Officers (ADOs)/Krishi Vigyan Kendra (KVK) officials, accounting for 50%. This highlights the crucial role played by extension

services in spreading awareness. However, only 6.7% of the respondents learned about the scheme through mass media (newspaper, TV, or radio), and an equal proportion through peer farmers. Possibly it is due to busy schedule of farmers, they are not able to spend time with their peers, as they spent most of their time in fields making their living. Among the respondents who were aware of SHCS, a majority (53.3%) of them had a very low understanding of the scheme. Only (3.3%) reported having a low level of knowledge, and (6.7%) indicated a moderate understanding. None of the respondents reported a high or very high level of knowledge. This stark gap between awareness and actual understanding suggests a superficial exposure to the scheme without adequate explanation or follow-up support.

**Table 3:** Distribution of respondents as per utilization and perceived impact of the Soil Health Card Scheme

| Name of Variable | Category or Sub-Category   | Number | Percentage (%) |
|------------------|--|--------|----------------|
| Get benefit      | Yes  | 32     | 53.3           |
|                  | No   | 6      | 10.0           |
|                  | Not Aware about Scheme   | 22     | 36.7           |
|                  | Total  | 60     | 100.0          |
| Impact           | It protects the soil from degradation  | 2      | 3.3            |
|                  | No impact. Agriculture dept officials collected the sample but not provided the report | 30     | 50.0           |
|                  | Not Aware about Scheme   | 28     | 46.7           |
|                  | Total  | 60     | 100.0          |

Source: Field Survey 2022

Out of the respondents who were aware about scheme, 53.3% reported that they received some benefit under the SHCS. However, 10.0% stated that they did not receive any benefit. This reflects, the actual translation of awareness into benefit realization is not universal, and many farmers remain disconnected from the scheme altogether. When asked about the impact of the scheme, only 3.3% respondents believed that it helped in protecting the soil from degradation while 50.0% reported that no impact was observed. Many of them stated that Agriculture Department

officials collected soil samples, no reports or actionable feedback were provided to them. Remaining mentioned that ADO's provided soil cards without collecting soil samples. This result is alarming and indicative of serious implementation flaws. The absence of soil sample collection, report dissemination, follow-up services, and practical guidance effectively neutralizes the scheme's potential to improve soil health and encourage balanced fertilizer use.

**Table 4:** Distribution of respondents as per problems and coping strategies related to the Soil Health Card Scheme

| Name of Variable  | Category or Sub-Category   | Number | Percentage (%) |
|-------------------|--|--------|----------------|
| Problems          | Soil sample has been collected many years ago but soil health card has not been provided yet     | 12     | 20.0           |
|                   | Soil testing is not done on regular basis  | 4      | 6.7            |
|                   | Health card has been provided without soil testing   | 2      | 3.3            |
|                   | SHC has been issued but no guidance has been provided by officials. So, of no use.               | 2      | 3.3            |
|                   | Not answered by the respondent   | 4      | 6.7            |
|                   | No problem   | 2      | 3.3            |
|                   | Last year sample has been collected but SHC has not been issued                                  | 10     | 16.7           |
|                   | Report is not satisfactory...first fifty reports of the village are same and next fifty are same | 2      | 3.3            |
|                   | Not Aware about Scheme   | 22     | 36.7           |
|                   | Total  | 60     | 100.0          |
| Coping mechanisms | Doing soil testing at own level  | 4      | 6.7            |
|                   | Not taken any step   | 28     | 46.7           |
|                   | Not Aware about Scheme   | 28     | 46.7           |
|                   | Total  | 60     | 100.0          |

Source: Field Survey 2022

The findings show a wide range of issues associated with the SHCS. Among the respondents who were aware about the scheme 20.0% reported that soil samples were collected many years ago, but the Soil Health Card has still not been provided, 16.7% shared that samples were collected last

year, but SHCs were not issued, 6.7% mentioned that soil testing is not conducted on a regular basis, 3.3% indicated that SHCs were provided without any soil testing, while another 3.3% said the card was issued but no official guidance was offered, rendering the scheme ineffective for

them. Additionally, 3.3% raised concerns over the quality of reports, stating that soil health cards for large groups of farmers in the same village had identical data, suggesting fabrication or bulk reporting without proper testing. 6.7% (4 respondents) did not answer the question. Only 6.7% reported conducting soil testing at their own expense, which

reflects proactive behavior but also indicates that only a few farmers have the awareness or financial capacity to take independent steps. While, 46.7% said they had not taken any step, which can be interpreted as helplessness, lack of awareness, or economic inability to act.

**Table 5:** Distribution of respondents as per satisfaction level with the Soil Health Card Scheme

| Name of Variable   | Category or Sub-Category       | Number | Percentage (%) |
|--------------------|--------------------------------|--------|----------------|
| Satisfaction Level | Fully Satisfied                | 2      | 3.3            |
|                    | Fully Dissatisfied             | 32     | 53.3           |
|                    | Not answered by the respondent | 4      | 6.7            |
|                    | Not Aware about Scheme         | 22     | 36.7           |
|                    | Total                          | 60     | 100.0          |

Source: Field Survey 2022

The findings indicate that among the respondents who were aware about the scheme only 3.3% reported being fully satisfied with the SHCS. A majority of 53.3% expressed being fully dissatisfied due to poor implementation of the scheme. The major reasons for their dissatisfaction included irregularities in soil sample collection, non-issuance of Soil

Health Cards, inaccurate reports, information on the cards being difficult to understand, and lack of guidance regarding their soil health status. Out of total 6.7% respondents did not answer the question. The extremely low satisfaction rate, contrasted with the high dissatisfaction rate, signals a deep disconnect between policy design and field-level execution.

**Table 6:** Distribution of respondents as per Suggestions for Improvement of the Soil Health Card Scheme

| Name of Variable | Category or Sub-Category  | Number | Percentage (%) |
|------------------|---|--------|----------------|
| Suggestions      | Soil sample should be collected regularly and timely soil health card should be issued          | 32     | 53.33          |
|                  | Information provided on the soil health card should be simplified. It should be understandable. | 12     | 20             |
|                  | Awareness should be generated among the farmers regarding the scheme                            | 14     | 23.33          |
|                  | Not answered by the respondent  | 4      | 6.66           |
|                  | Not Aware about Scheme  | 22     | 36.66          |
|                  | (Multi-Response Table)  |        |                |

Source: Field Survey 2022

Mostly (53.33%) farmers recommended that regular soil sample collection and timely issuance of Soil Health Cards should be done by government under this scheme. Simplification of information on the Soil Health Card was suggested by 20 percent respondents because many small and marginal farmers, with limited formal education, find it difficult to interpret soil reports and apply the recommendations. Out of the farmers who were aware about the scheme, 23.33 percent suggested that there is a need to generate awareness among farmers regarding the scheme because a significant proportion of farmers are unaware or did not understand how to utilize SHCS. A substantial share of (6.66%) respondents not gave any suggestion. Possibly it is due to lack of awareness or engagement with the scheme or chose not to answer.

## Major Findings

Some of the major findings as per study are following:

- In Kurukshetra district of Haryana farming remains an older male-dominated activity, with most respondents were male and over 40 years of age. Despite of extensive experience in farming a substantial proportion of respondents were not aware about the scheme. This shows a negative correlation between the age and awareness level.
- Majority of small and marginal farmers belonged to the General category and there was complete absence of Schedule caste. This suggests that access to land, farming resources, and participation in the agricultural

economy in the study area may be dominated by upper social strata and there is complete failure of land reform in Haryana.

- Mostly farmers were living in pucca houses and had joint family. This indicates that there is relative stability in living standards and has strong traditional family structure among S&M farmers in Kurukshetra district.
- Farmers had moderate level of awareness and very low level of knowledge about the Soil Health Card scheme. It shows that however the scheme had reached a moderate number of farmers in terms of awareness but the depth and quality of that awareness were poor. Due to their low level of education, farmers do not have a thorough understanding of the Soil Health Card (SHC) scheme. Most have only heard the name of the scheme but are unaware of its objectives, benefits, application process, or how to use the information provided in the Soil Health Card. This indicates a positive correlation between education level and awareness. It also highlights a significant gap between awareness and understanding.
- Study raised serious structural and procedural flaws in the scheme's implementation. Although, ADOs are playing significant role in awareness generation among farmers but the impact of the scheme is diluted by lack of understanding, insufficient extension support, and limited farmer capacity to adopt recommended practices.

- Farmers reported a number of problems related to SHCS including delays in issuing SHCs, lack of follow-up, personalized guidance, and standardized reporting. It found that over half of the respondents being fully dissatisfied with the SHC scheme. So, such shortcomings not only diminish the credibility of the scheme but also erode farmers' trust in government-led interventions. Furthermore, the coping mechanisms are negligible because mostly farmers are helpless or have lack of knowledge and economic inability to act.

### Recommendations

Based on the findings of study, researcher recommended that there is a need to strengthen awareness generation and training initiatives among farmers. This could be achieved through localized campaigns, village-level meetings, field demonstrations, and better integration with existing agricultural extension services. Further, there is a need to institutionalize a system of regular and timely soil testing, accompanied by prompt issuance of Soil Health Cards. This would help build and maintain farmers' trust in the scheme while ensuring the recommendations remain relevant to their current cropping conditions. Also, the content of the SHC should be made more accessible by simplifying technical information and ensuring it is communicated in the local language. The inclusion of visual aids and easily comprehensible instructions would significantly enhance farmers' ability to interpret and apply the information effectively. Moreover, the establishment of a transparent and accessible grievance redressal mechanism at the block or district level would empower farmers to report challenges such as delays or non-receipt of SHCs. Lastly, creating structured channels for beneficiary feedback will provide valuable inputs for continuous improvement of service delivery. These measures, taken collectively, can significantly strengthen the operational framework of the SHC Scheme and improve its impact at the grassroots level.

### Conclusion

The Soil Health Card Scheme, despite its promising intent and moderately successful outreach, has fallen short of expectations in the Kurukshetra district due to operational inefficiencies and poor farmer engagement. The disconnect between soil sample collection and report delivery, coupled with limited farmer awareness and guidance, has significantly hampered the scheme's effectiveness. With only a small fraction of respondents expressing satisfaction, it is clear that immediate corrective steps are required. Ensuring timely and quality service delivery, simplifying technical content, expanding awareness, and building stronger implementation frameworks are essential to realize the scheme's objective of promoting sustainable soil management and improving agricultural productivity for small and marginal farmers. Addressing these gaps is crucial for making the SHC scheme a truly transformative intervention in Indian agriculture.

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