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A STUDY ON EFFECTS OF ORGANIC FARMING ON SOIL CHARACTERISTICS IN SRI GANGANAGAR

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ABSTRACT

Agriculture practices such as cover crops, crop rotation, and conservation tillage are all examples of soil health methods that have a multitude of beneficial benefits on both the economy and the environment. The advantages include the reduction of soil erosion, the prevention of nutrients from leaching, the creation of habitats for beneficial insects and pollinators, and the sequestration of carbon that is produced. On the other hand, techniques for controlling soil fertility are hardly acknowledged, let alone put into effect. In recent years, soil health practices have become a common ground for many diverse organisations involved in agriculture. This has resulted in the gathering of scientists and opened the door to improved economic opportunities for everyone. A lack of data on soil health and a lack of desire to undertake soil health management methods are two of the primary barriers that they regard to be major obstacles to enhancing agricultural productivity in the country. A study was carried out in the Sri Ganganagar region of Rajasthan with the purpose of determining the extent of people's comprehension of soil health interventions and their use of these interventions. Because of this, a total of 120 farmers were selected at random to participate in the research project. In order to accomplish the objectives, a comprehensive interview schedule was developed. The outcomes of the study indicate that certain measures for improving soil health have garnered a significant amount of attention. Utilising green manure or organic manure, irrigation with water of superior quality, field bunding and land levelling are some of the methods that fall under this category. In spite of this, there are a great number of farming strategies that are not particularly popular. Some examples of these strategies are integrated farming systems and reduced tillage approaches that are utilised in conjunction with cover crops. Overall, just 40.72 percent of the interventions that are intended to improve soil health are currently being applied, which suggests that there is a need for improvement.

Keywords: *Soil health, soil properties, organic farming*

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INTRODUCTION

When it comes to supplying plants with the nutrients they need to thrive, soil, which is an essential component for successful farming, plays a significant role. In order for crops to flourish and realize their full potential, it is essential to have soil that is in good condition and includes all of the ingredients that are required for growth and development. When it comes to agricultural production, food quality, environmental resilience, and ecosystem sustainability, the conditions of the soil are an extremely important issue to consider. Significant significance is attached to it in relation to the characteristics of the soil. The proportion and quantity of macronutrients and micronutrients that are present in the soil are what determine the health of the soil. When it comes to agricultural output, the state of the soil is an extremely important factor in determining whether or not they will produce sustainable results. The health of the soil becomes an essential component in ensuring that farming operations are both productive and efficient. This is accomplished by maximizing the utilisation of fertilizers and minimizing waste. A significant number of farmers are turning to the use of increasingly huge quantities of artificial fertilizers in an effort to increase the yields of their crops. On the other hand, they could not be aware of the fact that they are engaging in this technique without having a complete comprehension of the fertility levels of their land. This information was uncovered by Patel and colleagues in a study that was carried out in. It has been discovered that the improper use of fertilizers can have either a direct or indirect effect on the qualities of the soil, which might result in undesirable changes [1].

The challenges that our soils are in the process of overcoming are not only important, but they also have far-reaching ramifications for our society. The health of the soil is an important factor that has an impact on many different elements of our life, including agriculture and the production of food, as well as the sustainability of the environment and the well-being of humans. Given this, it is of the utmost importance that we solve these difficulties in order to guarantee a future that is sustainable not just for our soils but also for our society. Deterioration is one of the most significant difficulties that our soils are currently facing. Ploughing has produced microbial degradation, which has resulted in the loss of soil organic matter, which is generally quantified as soil organic carbon. This loss of soil organic matter has occurred as a result of land disturbance caused by ploughing. The disintegration of aggregates that previously protected organic materials has occurred as a result of this disruption. There has also been a significant contribution to the depletion of soil organic matter brought about by excessive erosion brought about by wind or water. Up to two-thirds of the A-horizon, which is more often referred to as topsoil, has been lost throughout a sizeable section of the land across the country, which is a cause for concern. In addition to housing the majority of plant roots, this layer of soil also contains key plant nutrients and soil organic carbon, making it a very important component. Furthermore, it provides a habitat for a wide variety of species that are able to live in the soil.

The magnitude of this loss is concerning, and it raises worries for the long-term welfare of our soil as well as its potential for productivity. When it comes to crop productivity, the effects of soil degradation are not limited to merely impacting the biological and physical components of soil functioning [2]. It also plays a substantial part in the decrease of ecosystem services. This is something that they are highlighting. To ensure the long-term sustainability and stability of farming ecosystems, it is essential to have a thorough understanding of the condition of the soil's health, as was specifically mentioned. Numerous environmental and economic benefits have been discovered to be associated with the use of soil health techniques. These practices include cover cropping, crop rotation, and conservation tillage. Not only do these techniques contribute to the success of the farms in which they are applied, but they also have good impacts that extend beyond the realm of agriculture. These include the capacity to store carbon, bring about a reduction in soil erosion, stop the leaching of nutrients, and establish habitats for pollinators and insects that are helpful to the environment [3]. Some of the factors that have contributed to nutritional deficits in soil are the non-judicial application of fertilizers, the insufficient addition of organic matter, and the failure to restore depleted micro and secondary nutrients over time. It has been discovered that there is a relatively low degree of knowledge and implementation of activities that are associated with soil fertility management [4].

The Soil Health Card, often known as the SHC, is an important instrument that provides farmers with crucial information regarding the state of their soil. By conducting an analysis of the chemical composition of the soil, the SHC provides farmers with data that assists them in making educated decisions regarding the growing of crops and the effective utilisation of fertilizers within the soil. The purpose of this document is to serve as a guide, providing insights on the nutrient availability, physical qualities, and chemical properties of the soil, all of which contribute to the soil's overall health. In the sphere of agriculture, diverse stakeholders have come together to form a unified front through the implementation of soil health measures. Through the use of these methods, the scientific community is brought together, which results in the provision of useful insights into the most recent cropping practices, tools, and techniques. Furthermore, farmers and the government are actively involved in the implementation of these techniques in order to create economic upliftment for the wider community [5]. In the field of agriculture, the connection between existing knowledge and the willingness to embrace new ideas is of the utmost importance. This research was conducted with the intention of determining the extent to which soil health techniques are being widely known and put into practice.

OBJECTIVES

1. To study organic farming
2. To study effect of organic farming on soil characteristics in Sri Ganganagar.

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RESEARCH METHODOLOGY

In the state of Rajasthan, more specifically in the district of Sri Ganganagar, this investigation was carried out. There were four villages in the Sri Ganganagar district that were chosen at random: Amarsar, Bhompura, Dulrasar, and Kararwali. For the purpose of gathering the necessary information, thirty farmers were selected at random from each of the communities of interest. For the objective of this study, a total of 120 farmers were selected to participate as respondents. The study took into consideration a variety of socio-economic factors, including but not limited to age, education, caste, land ownership, irrigation methods, sources, agricultural systems, crop rotation practices, and farm machinery. In addition, communicational features were taken into consideration, including contact with extension personnel and exposure to mainstream media. Not only did the researchers take into consideration the frequency with which farmers utilised the Kisan Credit Card (KCC) and the Soil Health Card (SHC), but they also considered the extent to which farmers comprehended the significance of soil health and whether or not they really implemented soil health measures when cultivating crops [6]. A value of '0' for 'not aware' and a value of '1' for 'aware' were used in the study to measure the level of awareness that farmers have regarding soil health procedures for the purpose of sustainable crop production. In a similar manner, the research tallied the number of people who had agreed to participate in the activity, with one being the maximum level of adoption and zero being the lowest level of acceptability. An intentionally planned and pretested interview schedule was utilised in order to collect data from the respondents who were the subjects of the sample. For the purpose of arriving at meaningful conclusions, appropriate statistical measures such as the mean, frequency, percentage, and rank order were utilized [7].

RESULTS AND DISCUSSION

Brief Introduction to the Selected Respondents

Within the scope of this study, a detailed analysis was carried out in order to evaluate the various socio-personal, socio-economic, and communicational characteristics of the sample. If we look at the findings on the socio-personal characteristics of the respondents, we find that the middle-aged make up 54.17 percent of the total, followed by the young at 28.33 percent and the elderly at 17.50 percent as subgroups. 47.67 percent of respondents had completed their secondary education, while 25.63 percent had completed some college, and 18,000 had gotten a bachelor's degree or higher. The biggest percentage of respondents had completed secondary school. Following the backward class (14.17%) and the scheduled castes (6.67%) as the types of castes that are most prevalent among respondents is the general caste, which accounts for 78.17% of the total. A sizeable proportion of the participants, specifically 38.33 percent, are classified as small farmers. Additionally, 30.83 percent of the participants are classified as medium farmers, and 28.33 percent are classified as marginal

farmers. The proportion of respondents who owned a significant amount of land was only 7.50 percent of the total. When farmers were asked about the methods they used to irrigate their land, the majority of them depended on canals, while 6.1.67% used tube wells. On the other hand, participants in the study who had access to both canal and tube well irrigation systems made up 56.67 percent of the total [8].

In terms of farming methods, the next most prevalent ones were organic farming (11.67% of respondents), polyhouse vegetable production (6.67% of respondents), fisheries (1.67% of respondents), and mushroom cultivation (0.83% of respondents). The overwhelming majority of respondents, which accounted for 93.33 percent, used livestock techniques. Rice-wheat rotation accounts for three percent of all crop rotations, while cotton-wheat rotation accounts for 68.33 percent, pearl millet-mustard rotation accounts for 45 percent, and rice-wheat [9]. The findings make it very evident that 48.33% of the individuals who participated in the poll had a tractor operational on their farm. 45 percent of the participants reported having a harrow, 38 percent had a rotavator, 32.50 percent had a seed-cum-fertilizer drill, 28.33 percent had a multi-crop thresher, 15.00 percent had a straw reaper, 13.33 percent had an MB plough, and 0.5 percent had a laser field leveler. These are the various pieces of agricultural machinery that were present [10].

When it comes to communicational characteristics, progressive farmers had the highest weighted mean score (3.11), followed by input dealers/sales representatives (2.93). This was the case among the extension interactions that the farmers had. There was a tie for third place between the SDAO/SMS and the Scientists, with the Agriculture Development Officers/HDO coming in fifth. The findings indicated that mobile media consumption ranked highest with a mean score of 2.25, followed by watching television (WMS = 1.73), reading newspapers (WMS = 1.56), listening to the radio (WMS = 0.27), and accessing the internet (WMS = 0.30), in that order. The results also indicated that the most common form of media exposure was mobile media consumption [11].

As a consequence of the findings, it was discovered that 71.67 percent of respondents have utilised the Kisan Credit Card (KCC) service, and that 96.67 percent of respondents were aware of the KCC. A total of around 41 percent of respondents are aware of the credit limit, while 46.67 percent are aware of the interest rate. The KCC renewal term is something that is known to more than two-thirds of the respondents (68.33 percent). A significant number of individuals believe that the credit limit that was granted by KCC is adequate (67.50 percent), and an even greater number believe that it is a card that is simple to use (68.13 percent) [12]. The findings also revealed that sixty-five percent of the individuals who were polled possessed a Soil Health Card (SHC), sixty percent of them were aware that the card demonstrates the state of the soil, and forty percent of them were urged to make prudent use

of fertilizers as a result of the card. Five hundred and sixty-seven percent of people who participated in the study were aware of the tenure of the SHC [13].

Awareness of Farmers about Soil Characteristics

As can be seen in Table 1, farmers are aware of certain characteristics of the soil. A significant number of respondents, 81.67 percent, are aware of the significance of soil testing, as indicated by the findings. In addition, they were aware of soil testing laboratories (79.17%), the amount of moisture that is present in the soil prior to planting crops (79.17%), the types of soil that are most suitable for various crops (74.17%), the fact that the amount of money spent on crop production decreases after soil testing (72.5%), the fact that there is a suitable time to collect soil samples (71.67%), the fact that the soil samples should be tested (68.33%), and the fact that the soil can retain water (67.50%).

In addition, after conducting soil testing, a sizeable majority of respondents (64.17 percent) had a better understanding of the fertility status of their soil, a greater number of crop options (60.83 percent), the correct depth and weight of a soil sample (55.17 percent), the salinity and sodicity of the soil (55.63 percent), and a number of major and micronutrients (51.67 percent).
The knowledge of the respondents regarding the causes of soil erosion and the methods used to control it is low (45.83%), as is their knowledge of the pH of the soil (36.33%), and the organic carbon content of the soil (30%). The total awareness of soil properties among the respondents was determined to be 62.96%, which indicates that there is much opportunity for improvement in this area. According to a number of studies, both those who have adopted these habits and those who have not adopted them have seen significant benefits. Among these include an increase in the amount of organic matter in the soil, a reduction in erosion, improved weed control, and a reduction in soil compaction.

Farmers' Knowledge of Factors Contributing to Soil Degradation

A look at Table 2 reveals that the farmers have a good understanding of the factors that could lead to soil degradation. The degradation of soil can be attributed to a wide variety of factors. In excess of sixty percent of those who participated in the survey were aware of the following: low-quality irrigation water, excessive use of chemical fertilizers, an intensive cropping system, deforestation in the field, excessive use of pesticides and insecticides, wind and water erosion, and rising salinity and sodicity on the surface of the soil. On the other hand, fewer than half of the people who participated in the survey were aware of the variables that contribute to soil deterioration. These factors include the overapplication of fertilizers without first evaluating the soil health class (SHC) or soil status, as well as the absence of legumes, new crops being introduced into the system, poor irrigation methods (surface and

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flood), the absence of gypsum and lime being applied to the soil, and the burning of straw from paddy and wheat crops in the field are all factors that contribute to soil erosion.

Table 1. Knowledge of soil properties among farmers

(n=120)

S. No	Awareness statements	Awareness Level			
		Aware		Not aware	
		F	% age	F	% age
1.	Soil types	88	73.33	32	26.67
2.	pH of your soil	46	38.33	74	61.67
3.	Salinity/sodicity of soil	67	55.83	53	44.17
4.	Difference between soil structure and soil texture	72	60.00	48	40.00
5.	Organic carbon content of soil	36	30.00	84	70.00
6.	Crops suitable for your soil	89	74.17	31	25.83
7.	Fertility status of your soil	77	64.17	43	35.83
8.	Moisture retention capacity of soil	81	67.50	39	32.50
9.	Aware about soil testing laboratories	95	79.17	25	20.83
10.	Major and Micronutrients of soil	62	51.67	58	48.33
11.	Soil erosion causing and controlling measures	55	45.83	65	54.17
12.	Significance of soil testing	98	81.67	22	18.33
13.	Suitable time for collection of soil sample	86	71.67	34	28.33
14.	Proper depth & weight of soil sample	71	59.17	49	40.83
15.	Aware when soil sample should be tested	82	68.33	38	31.67
16.	Soil moisture before sowing of crops	95	79.17	25	20.83
17.	Options of crops increased after soil testing	73	60.83	47	39.17
18.	Expenditure on crop production decreases after soil testing	87	72.50	33	27.50
Mean Awareness Score			11.33		
Overall Awareness (%)			62.96		

Based on the data obtained from other factors that indirectly lead to soil degradation, the majority of respondents, which accounted for 77.5 percent, were aware that the use of salty or sodic underground water for irrigation purposes would result in the degradation of the soil. In addition, respondents were aware of the following factors that contribute to soil degradation: inadequate access to farm advisory services (63.33 percent), excessive resource utilisation as a result of untreated sewage water (71.67 percent), the direct use of industrial effluent (wastewater) for irrigation (59.17 percent), and a deficiency in conservation technologies (56.67 percent). It was found that respondents lacked awareness of the elements that effect soil health. For example, 46.67 percent of respondents were unaware of the notion that an increasing population places more burden on land, and forty percent were unaware of climate change, which includes irregular monsoons, droughts, and floods. It was found that 55.58 percent of people had a general degree of information regarding the elements that contribute to the deterioration of soil [14].

Farmers' Level of Adoption of Soil Health Practices

The data shown in Table 3 demonstrates that some soil health activities have garnered widespread acceptability among the respondents. This acceptance is based on the amount of adoption that farmers have towards these procedures. Some of these methods include grading the land so that irrigation water is evenly distributed (86.33%), bunding the fields to prevent water erosion (86.67%), watering crops with high-quality water (80.00%), using green manure or organic manure (74.17%), testing the soil and water with a soil and water analyzer (65.00%), growing crops that can withstand salt (65.0%), using agricultural machinery to incorporate crop residue (61.67%), deep ploughing to address soils affected by salt (60.83%), growing leguminous crops (60.83%), site-specific soil management (60%), and finally, applying gypsum to soils that are sodic or salty (54.83%). In addition, albeit to a lesser extent, responders have also adopted new approaches for the health of the soil. As part of these practices, soil health cards, permanent vegetation cover, minimal pesticide use, balanced fertilizer application, interseeding and aerial seeding to increase soil health and decrease erosion, technology that utilizes minimal tillage or zero tillage, and the recharge of ground water during the rainy season are all included [15].

A few of the clinics had adoption rates that were below thirty percent. These included using cover crops after reduced tillage (29.17%), leaching salts from salty soil (28.33%), an integrated farming system (26.67%), micro irrigation (26.67%), an adequate drainage system (24.17%), adding sulphur and ferrous sulphate (FeSO4) to alkaline soils (21.67%), applying lime to acidic soils (12.5%), a furrow irrigated raised bed system (12.5%), cultivating deep-rooted plantation in waterlogged soil (6.67%), rain water harvesting/watershed management (5.73%), and surface mulch (5%). For instance, "timely geospatial information on soil requirements" is an example of a practice that none of the respondents had implemented. The

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overall implementation rate of soil health interventions was just 40.72 percent, which is much lower than what is deemed sufficient and clearly indicates that there is room for **improvement.**

Table 2. Education of Farmers on the Factors Contributing to Soil Degradation

(n=120)

S. No	Awareness statements	Awareness Level			
			Aware	Not aware	
		F	% age	F	% age
Direct Causes					
1.	Excessive use of chemical fertilizers	92	76.67	28	23.33
2.	Non-judicious use of insecticides/pesticides in field	74	61.67	46	38.33
3.	Less application of organic manure (FYM or farm manure)	83	69.17	37	30.83
4.	Application of fertilizers without knowing SHC/soil status	58	48.33	62	51.67
5.	Non-application of gypsum and lime in soil	51	42.50	69	57.50
6.	Intensive cropping system	75	62.50	45	37.50
7.	Continuous mono-cropping system	89	74.17	31	25.83
8.	Lack of legume crops introduction in cropping system	56	46.67	64	53.33
9.	Straw burning of paddy and wheat crop stubble in the field	53	44.17	67	55.83
10.	Poor irrigation water	97	80.83	23	19.17
11.	Faulty irrigation method (surface/flood) irrigation	48	40.00	72	60.00
12.	Poor drainage system	38	31.67	82	68.33
13.	Deforestation in the field	82	68.33	38	31.67
14.	Soil erosion by wind/water	74	61.67	46	38.33
15.	Heavy tillage exposed the soil carbon to environment	41	34.17	79	65.83
16.	Undulated land/No laser land leveling	32	26.67	88	73.33
17.	Increasing salinity and sodicity in soil surface	73	60.83	47	39.17
18.	Rising of soil surface underground water table	42	35.00	78	65.00

Other causes					
19.	High population growth causing more pressure on land	56	46.67	64	53.33
20.	Limited access to conservation technologies	68	56.67	52	43.33
21.	Poor access to farm advisory services	76	63.33	44	36.67
22.	Due to climate change (Aberrant monsoon/drought/flooding)	48	40.00	82	68.33
23.	Land tenure leads to over exploitation of available resources	86	71.67	34	28.33
24.	Direct use of industrial effluent (wastewater) for irrigation	71	59.17	49	40.83
25.	Use of sewage water without treatment for irrigation	78	65.00	42	35.00
26.	Use of saline and sodic underground water for irrigation	93	77.50	27	22.50
Mean Awareness Score			14.45		
Overall Awareness (%)			55.58		

Table 3. Level of soil health practice adoption by farmers

(n=120)

S. No.	Statements	Adoption level			
		Adopted		Not adopted	
		F	% age	F	% age
1.	Permanent soil cover by vegetation	52	43.33	68	56.67
2.	Leaching of salts in saline soil	34	28.33	86	71.67
3.	Application of gypsum for sodic and saline soils	67	55.83	53	44.17
4.	Application of lime for acidic soils	15	12.50	105	87.50
5.	Land leveling for equal distribution of irrigation water in the field	106	88.33	14	11.67
6.	Adoption of minimum disturbance of soil/minimum tillage/zero tillage	38	31.67	82	68.33
7.	Field bunding to control water erosion	104	86.67	16	13.33

8.	Cultivation of deep-rooted plantation in waterlogged soil	8	6.67	112	93.33
9.	Application of green manure/organic manure in the field	89	74.17	31	25.83
10.	Irrigation of crops with good quality water	96	80.00	24	20.00
11.	Integrated farming system	32	26.67	88	73.33
12.	Balanced use of fertilizers based on soil health cards	41	34.17	79	65.83
13.	Crop residue incorporation by agricultural mechanization	74	61.67	46	38.33
14.	Site specific soil management	72	60.00	48	40.00
15.	Furrow irrigated raised bed system	15	12.50	105	87.50
16.	Surface mulch (protect from rain drops)	6	5.00	114	95.00
17.	Use of micro irrigation methods instead of surface irrigation	32	26.67	88	73.33
18.	Soil and water testing/SHC	78	65.00	42	35.00
19.	Adequate drainage system	29	24.17	91	75.83
20.	Minimum use of pesticides	42	35.00	78	65.00
21.	Salt tolerant crop in problematic soils	78	65.00	42	35.00
22.	Deep ploughing for salt affected soil	73	60.83	47	39.17
23.	Rainwater harvesting/watershed management	7	5.83	113	94.17
24.	Recharge of ground water during rainy season	53	44.17	67	55.83
25.	Timely geospatial information on soil requirements	0	00.00	120	100.00
26.	Adding of Sulphur and Ferrous Sulphate (FeSO4) in Alkaline soils	26	21.67	94	78.33
27.	Adoption of reduces tillage followed by cover crops	35	29.17	85	70.83
28.	Cultivation of leguminous cash crop	73	60.83	47	39.17
29.	Inter seeding and aerial seeding to increase soil health and decrease erosion	42	35.00	78	65.00
Mean Adoption Score			11.81		
Overall Adoption Level			40.72		

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Farmers' Obstacles in Embracing Soil Health Practices

With regard to the challenges that farmers have when attempting to put soil health measures into effect, the information is shown in Table 4. Seventy-four point seventeen percent of individuals who participated in the study identified "difficulties in understanding all information in soil testing report" as a "serious" obstacle to the implementation of these rules. The following were in close second place: unsatisfactory pulse production (70.83 percent), difficulties in calculating fertilizer doses based on the soil nutrient status (70 percent), a tendency to disregard soil testing when field crop yield is good (68.33 percent), a lack of up-to-date and trustworthy information about soil health (65 percent), an ignorance of the benefits of soil health practices (63.33 percent), and a lack of knowledge about the issues that are linked to problematic soils [16].

On the other hand, when it came to the implementation of soil health measures, some constraints were seen as being of less significance. Some of these problems include a lack of livestock at the household level (86.67 percent), a significant distance between soil testing labs (80 percent) [17], market micronutrient availability (76.67 percent), yield increase uncertainty (73.33 percent), and green manuring seed availability (63.3 percent) are the three levels of market micronutrient availability. There is a shortage of soil health education and awareness initiatives for farmers, which accounts for 61.67 percent of the total. Additionally, there is a delay in getting results, which accounts for 60.83 percent of the total. A delay of 56.67 percent is caused by the financial constraints that are associated with the utilization of vermi-compost and biofertilizers. Additionally, there is an unacceptably big gap of sixty percent between the sample of soil and the issue of cards [18].

Table 4. Farmers' obstacles to implementing soil health measures

(n=120)

S. No.	Constraints	Serious		Not serious	
		F	% age	F	% age
1.	Lack of access to reliable and current information related to soil health	78	65.00	42	35.00
2.	Lack of knowledge about soil testing	46	38.33	74	61.67
3.	Non availability of soil test reports in time	47	39.17	73	60.83
4.	Unaware about the problems associated with problematic soils	65	54.17	55	45.83

5.	Financial constraints in using vermin-compost and bio fertilizers	52	43.33	68	56.67
6.	Unsatisfactory production of pulses	85	70.83	35	29.17
7.	Shortage of livestock at household level	16	13.33	104	86.67
8.	Non availability of seeds for green manuring	44	36.67	76	63.33
9.	Limited number of awareness programs and trainings related to soil health for the farmers	46	38.33	74	61.67
10.	Gap between soil sampling and issuing card is too high	48	40.00	72	60.00
11.	Difficulties in understanding information in soil testing report	89	74.17	31	25.83
12.	Difficulties in calculation of fertilizer dose on basis of nutrient status of soil	84	70.00	36	30.00
13.	Soil testing laboratory are located far away	24	20.00	96	80.00
14.	No certainty in yield gain	32	26.67	88	73.33
15.	Non- availability of micronutrient in market	28	23.33	92	76.67
16.	Ignoring soil testing if field crop yield is good	82	68.33	38	31.67
17.	Lack of knowledge about advantages of soil health practices	76	63.33	44	36.67

CONCLUSION

The majority of respondents had a solid understanding of a variety of pertinent issues, including soil testing, soil moisture before planting, crop appropriateness, soil types, and other related topics. However, there are still certain areas in which there is a lack of understanding. This is particularly true when it comes to soil erosion, especially with regard to its origins and the techniques that are used to control it, pH levels, and the amount of organic carbon that is there. It was decided that there is potential for progress in the general knowledge of the properties of soil, which was found to be 62.96%. An overwhelming majority of individuals who participated in the study are aware of the primary causes of soil erosion. These causes include the excessive use of chemical fertilisers, the utilisation of water that is not suited for irrigation, and the utilisation of mono-cropping systems. However, there are certain factors that are not as well understood, such as the use of fertiliser without taking into account the state of the soil's health, the failure to include legume crops, and the utilisation of irrigation methods that are considered to be inefficient. As a whole, 55.58 percent of persons were aware of the factors that contribute to the degradation of soil. There

are several strategies for improving soil health that have gained widespread acceptance, as shown by the findings about the amount of adoption of these measures among farmers. This method includes a number of steps, including the application of green manure or organic manure, the levelling of the soil, the bunding of the fields, and the irrigation of the fields using of high-quality water. On the other hand, integrated farming practices and reduced tilling with cover crops are not used anywhere near as often as they could be. In terms of the overall adoption of soil health practices, which was assessed at 40.72 percent, there is space for improvement.

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