

FARMERS' AWARENESS LEVEL ABOUT SOIL RELATED ISSUES AND ITS CAUSES

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ABSTRACT

Environmental degradation and climate change are the two major problems confronting agriculture today. Soil is key factor and play important role in agriculture production. Land degradation is decline in productivity of land. It is estimated that 97.85 million ha area of country is undergoing land degradation. There are various factor responsible for soil degradation like climate change, excessive use of fertilizers and chemicles, soil transportation, sea water intrusion, water-wind erosion, movement of heavy vehicle, urbanization, industries effluent etc. The study was conducted in seven district of South Gujarat. Two taluka were selected from each district and five villages from each selected taluks. Five respondents were selected randomly from each selected villages. Thus, total 350 respondents selected for present investigation. Respondents had moderate level of awareness about soil related issues. Majority of respondents were aware about climate change and sea water intrusion was the key factor in deteriorate the soil quality.

Keywords: awareness, soil related issues, casues, environmental issues, soil deterioration

INTRODUCTION

Environmental degradation and climate change are the two major problems confronting agriculture today. Environmental impacts of agriculture and vise versa have raised serious questions about the sustainability of agricultural production systems because of widespread deterioration of soil, water and air quality. Soil is key factor and play important role in agriculture production. Land degradation is decline in productivity of land in term of bio-diversity and economy, resulting from various causes including climate and induced factors leading to the loss of ecosystem. It is estimated that 97.85 million ha area of country is undergoing land degradation. i.e. 29.77% of the total geographical area of the country during 2018-19. In Gujarat. around 52.22% of total geographical area is undergoing land degradation during 2018-19. Around 60 per cent cultivated land under soil erosion, water logging and salinity it significantly reduce the properties of soil and crop yield. (GOI, 2021)

There are various factors responsible for soil degradation like climate change, excessive use of fertilizers and chemicals, soil transportation, sea water intrusion, water-wind erosion, movement of heavy vehicle, urbanization, industries effluent etc. A better understanding of how farmers' perceived soil related issues and the factors influencing the awareness level of farmers is needed to formulate appropriate policies and programmes aimed at promoting successful

awareness of farmers to cope up with issues. Farmers of South Gujarat engaged with the cultivation of an agricultural and horticultural crop. It has a diversified ecosystem with coastal, hilly and green belt area. It is vulnerable to changes in environment. Therefore this investigation conducted in South Gujarat.

OBJECTIVE

To study the awareness level of respondents about soil related issues and its causes

METHODOLOGY

Ex-post-facto research design was be used in the study. The study was conducted in sevendistrict of South Gujarat. Two taluka were selected from each district and five villages from each selected taluks. The selection of taluka and villages were done randomly from diversified ecosystem, coastal area, hilly region and green belt respectively in order to get representation of varied topography and climatic condition. Five respondents were selected randomly from each selected villages. Thus, total 350 respondents selected for present investigation.

This study was based on the primary data which was collected from sample farmers by interview schedule. The data was analyzed by using percentage, frequency, mean, standard deviation *etc.*, to draw conclusion.

RESULTS AND DISCUSSION

Table 1: Awareness level of respondents about various soil related issues

(n=350)

| SN | Soil related issues | Mean | SD | Fully Aware | | Partially aware | | Not aware | |
|----|--|-------|-------|-------------|-------|-----------------|-------|-----------|-------|
| | | | | F | % | F | % | F | % |
| 1 | Decreasing soil fertility | 1.902 | 0.365 | 329 | 94.00 | 14 | 04.00 | 07 | 02.00 |
| 2 | Decreasing beneficial soil microbes | 1.814 | 0.475 | 298 | 85.15 | 39 | 11.14 | 13 | 03.71 |
| 3 | Increasing soil erosion | 1.728 | 0.543 | 272 | 77.71 | 60 | 17.14 | 18 | 05.15 |
| 4 | Soil become unsuitable for crop production | 1.697 | 0.590 | 268 | 76.57 | 58 | 16.57 | 24 | 06.85 |
| 5 | Subsoil compactness | 1.520 | 0.732 | 232 | 66.28 | 68 | 19.43 | 50 | 14.29 |

The data presented in table 1 revealed that 94.00 per cent respondents were fully aware about decreasing soil fertility with mean score (1.902) and followed by 85.15 per cent respondents were fully aware about decreasing beneficial soil microbes (1.814), 77.71 per cent respondents were fully aware about increasing soil erosion (1.728), 76.57 per cent were fully aware about soil became unsuitable for crop production (1.697) and 66.28 per cent were fully aware about sub soil compactness (1.520). The result is line with result of Ghasura *et al.* (2021).

From above result conclude that majority of respondents fully aware about decreasing soil fertility it may be due to they experienced requirement of fertilizer is

increased because of changing climate and other factors which reduce the inherent capacity of soil to supply the nutrients. Farmers also noted population of beneficial soil microbes, earthworm and other beneficial insect are decreasing, and it directly affects the soil physical and chemical properties. High intensity of rainfall and low density of vegetation increase the soil erosion incidence. It is very common in hilly area of South Gujarat although farmers were well aware about soil related issues. From the above findings, it may be concluded that majority of the respondents aware about soil related issues. This may be due to issues of soil directly affecting the production and changes are clearly noticeable and are being fronted by the farmers.

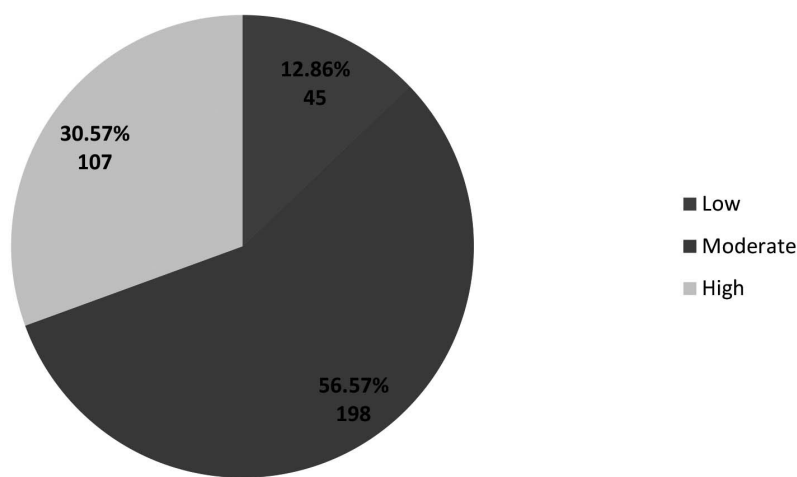


Fig. 1: Overall awareness level of respondents about soil related issues

(Mean= 10.34 SD=1.64)

n=350

Fig. 1 clearly indicated that majority (56.57 per cent) of the respondents had moderate level of awareness about the soil related issues followed by 30.57 and 12.86 per cent of the respondents had higher level and lower level of awareness respectively. The result in line with the result of Patel *et al.* (2015), Yeragorla & Seema (2021), Amreliya &

Chauhan, 2019), and Ghetiya *et al.* 2019).

Above result indicate that farmers had moderate to high level of awareness about soil related issues. The extension functionaries should take appropriate action for bring awareness among the farmers about issues.

The data presented in table 2 indicate that awareness of causes of soil related issues among the respondents important for undertaking adaptation measures to cope-up with issues. The study findings indicate that majority of the farmers (93.71 per cent) reported ‘climate change’ and ‘sea water intrusion’ (93.14 per cent) as two major causes of soil deterioration. ‘water-wind erosion’ and ‘excessive use of fertilizers’ were also reported as cause of soil related issues by 92.29 and 92.00 per cent 52.72, respectively. The other causes reported by the respondents were faulty agricultural practices (88.86 per cent), cultivation of exotic tree and plant (71.71 per cent), and movement of heavy vehicle (52.57 per cent). This result line with (Shukla, G. *et al.* 2015), (Sarkar, S. and Padaria, R. N., 2010), (Sarkar, S. and Padaria, R. N., 2015), (Sasmitha. R. and Arunachalam R., 2019).

From above result conclude that majority of farmers aware about the climate change indirectly affects the soil properties, sea water intrusion convert fertile soil in to saline in coastal area. Intensity of rainfall and wind velocity was also alter from last 10 year and eroded the soil easily. Due to the infertile soil use of chemical inputs were increased although reduces population of beneficial soil microbes and it change the soil properties.

This indicate that majority of the respondents were aware about different causes of soil related issues i.e. climate change, sea water intrusion, water-wind erosion etc. This is may be due to the causes reported by the respondents are clearly visible and understood by the people.

Table 2 : Awareness level of respondents about causes of soil related issues (n=350)

| SN | Causes | Frequency | Per cent | Rank |
|----|--|-----------|----------|------|
| 1 | Water-wind erosion | 323 | 92.29% | III |
| 2 | Climate change | 328 | 93.71% | I |
| 3 | Sea water intrusion | 326 | 93.14% | II |
| 4 | Excessive use of fertilizers and synthetic chemicals | 322 | 92.00% | IV |
| 5 | Faulty agricultural practices | 311 | 88.86% | V |
| 6 | Cultivation of exotic tree and plants | 184 | 52.57% | VII |
| 7 | Increase the movement of heavy vehicle | 251 | 71.71% | VI |

CONCLUSION

From present study conclude that majority of respondents had moderate level of awareness about soil related issues. Majority of farmers fully aware about various issues of soil and causes of it. Here need to increase the awareness among the farmers could help to increase their adaptation levels of strategies to cop up with issues. There is also a need to promote strategies for soil management and to improve the capacity of extension services to help farmers develop and adopt appropriate adaptation strategies.

POLICY IMPLICATION

The extension services should be strengthened to enhance farmers’ awareness of environmental issues and train them for adaptation measures and that suitable/indigenous technologies be promoted for adaptation by farmers.

Extension services are adapted based on local agro-ecological knowledge and techniques. This would inevitably lead to a more sustainable agriculture.

CONFLICT OF INTEREST

No conflict of interest among researchers.

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