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Farmers' Perspectives on Environmental Degradation: Causes, Losses and Mitigation Suggestions

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Abstract

Agriculture significantly contributes to this degradation through practices such as deforestation, excessive use of chemical fertilizers and pesticides, crop residue burning and unsustainable irrigation. The degradation of natural resources threatens food security, public health and ecological balance. Ex-post facto research design was used. Researchers conducted personal interviews with farmers at their homes. For the study's sampling, four talukas were randomly selected from the Anand district. From each of these four talukas, four villages were then randomly chosen, resulting in a total of 16 randomly selected villages. Finally, ten farmers were randomly selected from each of these 16 villages. This systematic approach yielded a total sample size of 160 respondents. Keeping in view these facts, the present investigation entitled "Farmers' perspectives on environmental degradation: causes, losses and mitigation suggestions" was undertaken with the following objectives. Assign scores, calculate the mean for each statement and rank statements based on these means.

Keywords: Environmental degradation, Farmers, knowledge, Sustainable agriculture.

1. Introduction

Environmental degradation caused by agricultural activities is evident through excessive use of fertilizers and pesticides, crop residue burning, deforestation, overgrazing, and unsustainable irrigation practices (Thakur *et al*., 2018) [6]. These have led to declining soil fertility, water pollution, biodiversity loss, and health hazards, ultimately affecting agricultural productivity and sustainability (Choudhary, 2014) [1]. In regions like Anand district, issues such as saline soils, fragmented landholdings, and intensive cropping patterns have intensified these problems (Fahimuddin, 2013; Rao *et al*., 2019) [2, 5]. Despite being primary stakeholders, many farmers lack awareness of environmentally sustainable practices due to limited education and exposure. Therefore, understanding their views on the causes and consequences of environmental degradation, along with their suggestions for mitigation, is essential for developing localized and practical solutions.

2. Objectives

i). To study the causes of environmental degradation and losses thereof as opined by the farmers

ii). To seek suggestions from the farmers to mitigate the environmental degradation

3. Methodology

This study employed an *Ex-post facto* research design, suitable for analyzing variables that cannot be manipulated directly, as suggested by Kerlinger (1976) [3]. Data were collected using a structured interview schedule developed in Gujarati, aligning with the study's objectives on its causes, losses and suggestions to mitigate environmental degradation. The schedule was pre-tested with 20 non-sampled respondents to refine its clarity and relevance. Personal interviews were conducted at the farmers' homes or workplaces to ensure comfort and openness, with prior explanation of the study's purpose to build rapport and gather accurate, reliable insights from respondents in middle Gujarat. To determine up to what extent the farmers understood the detrimental impacts of environmental degradation, a list of 18 statements was developed. For each statement, the response from the farmers was elicited in three-point continuum according to their opinion, viz. very serious, serious and not serious and scores of 2, 1 and 0 were assigned, respectively. For each cause, mean score was calculated and based on that, ranks were assigned to the causes in order of significance. To study the losses of environmental degradation as perceived by the farmers, a set of 20 statements was prepared. For each statement, the responses from the farmers were elicited in three-point continuum according to their opinion, viz. very

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severe, severe, and not severe and scores of 2, 1 and 0 were assigned, respectively. For each statement, mean score was calculated and based on that, ranks were assigned to the losses in order of significance.

4. Results and Discussion

Causes of Environmental Degradation as Opined by the Farmers

Environmental degradation is a process that decreases biological diversity and the ecosystem's overall health by disturbing the environment's integrity in some way. In other words, when natural processes and human activity cause the environment to deteriorate, it's referred to as environmental degradation. There are many causes of environmental degradation, but in order to understand the farmers' opinion in regards with the causes, a list of 18 statements was developed and responses were elicited from them. The data in this respect are shown in Table 1.

Table 1: Causes of environmental degradation as opined by the farmers

(n=160)

Sr. No.	Causes	Mean score	Rank
1.	Overuse of chemical fertilizers reduces soil fertility	1.24	V
2.	Improper agricultural waste disposal causes soil contamination	1.19	IX
3.	Overuse of pesticides and herbicides	1.43	II
4.	Excessive tillage promotes soil erosion	1.11	XIII
5.	Monoculture farming without planning depletes soil nutrients	1.10	XV
6.	Fertilizer runoff contaminates neighbouring groundwater sources	1.23	VI
7.	Water is contaminated when pesticides are applied close to sources	1.66	I
8.	Topsoil erosion lowers water quality	1.16	XI
9.	Overuse of groundwater dries up sources	1.19	VIII
10	Crop burning pollutes the air and harms the health	1.25	IV
11.	Old equipment emits toxic gases	1.01	XVIII
12.	Poor manure storage releases methane	1.20	VII
13.	Overgrazing damages vegetation and ecosystems	1.02	XVII
14.	Monoculture causes species extinction	1.11	XIV
15.	Excess pesticides kill beneficial insects	1.14	XII
16.	Deforestation worsens climate change and farm risks	1.34	III
17.	Poor residue management emits greenhouse gases	1.18	X
18.	Heavy machinery causes noise pollution	1.03	XVI

As apparent from the Table 1, the important causes as opined by the respondents for environmental degradation in descending order of rank are: Water is contaminated when pesticides are sprayed close to sources, Overuse of pesticides and herbicides, Deforestation worsens climate change and farm risks, Crop burning pollutes the air and harms the health, and Overuse of chemical fertilizers reduces soil fertility with the mean score of 1.66, 1.43, 1.34, 1.25 and 1.24, respectively.

4.1. Losses of Environmental Degradation as Opined by The Farmers

The effort was also made to study the different detrimental effects or damages brought about by environmental degradation, as perceived and experienced by farmers themselves. For this purpose, a list of 20 statements was developed to elucidate farmers' opinions on the consequences of environmental degradation. The data in this respect are depicted in Table 2.

Table 2: Losses of environmental degradation as opined by the farmers

(n=160)

Sr. No.	Losses	Mean score	Rank
1.	Soil fertility loss reduces crop production.	1.36	III
2.	Increased fertilizer expenses to compensate for soil nutrient loss.	1.27	VII
3.	Desertification erodes arable land.	1.01	XIX
4.	Poor soil structure has resulted in increased irrigation requirements.	1.26	IX
5.	The expense of irrigation has gone up	1.19	XV
6.	Poor water quality has adversely affected agriculture	1.43	II
7.	Water access is strained by groundwater depletion	1.21	XIII
8.	River sedimentation reduces irrigation efficiency	1.23	XII
9.	Pesticide spraying harmed both workers and adjacent neighbours.	1.34	VI
10	Low air quality affects crop health and yield.	1.24	XI
11.	Smog delays farming during certain seasons	1.26	VIII
12.	Crop yields have declined due to reduced pollinator populations	1.25	X
13.	Loss of predators increases pest attacks.	1.13	XVII
14.	Reduced plant diversity has affected soil health	1.15	XVI
15.	Frequent droughts cause major crop losses.	1.36	IV
16.	Floods destroy crops and farm infrastructure.	1.35	V
17.	Unpredictable weather disrupts farming schedules.	1.46	I
18.	Rising temperatures have resulted in crop stress and lower yield.	0.90	XX
19.	Constant equipment noise reduces worker productivity.	1.10	XVIII
20.	Loud noises stress to animals, which harms reproduction	1.19	XIV

The perusal of data presented in Table 2 indicates that the important losses as opined by the respondents due to environmental degradation in descending order of rank are: Unpredictable weather disrupts farming schedules; Poor water quality has adversely affected agriculture, Soil fertility loss reduces crop production, Frequent droughts cause major crop losses and Floods destroy crops and farm infrastructure with the mean score of 1.46, 1.43, 1.36, 1.36 and 1.35, respectively.

4.2. Suggestions Made by the Farmers to Mitigate the Environmental Degradation

To address the challenges faced by farmers in understanding environmental degradation, they were invited to provide their valuable suggestions. The responses were then analyzed to determine the frequency of each suggestion. These frequencies were subsequently converted into percentages to facilitate better understanding and interpretation.

Table 3: Distribution of the respondents according to their suggestions to mitigate the environmental degradation

(n=160)

Sr. No.	Suggestions	Percent	Rank
1.	Organize training and awareness programs to educate farmers about sustainable agricultural practices at local level	89.38	I
2.	Practice crop rotation and include diverse crops to maintain soil fertility and reduce pest outbreaks	76.25	II
3.	Conduct regular soil testing and apply fertilizers as per recommendation	64.38	III
4.	Plant more trees around farms and adopt agro-forestry practices to prevent erosion and improve biodiversity	63.13	IV
5.	Promote the use of drip and sprinkler irrigation systems to reduce water wastage and improve efficiency.	56.25	V
6.	Reduce the dependence on chemical pesticides by adopting natural alternatives like neem-based sprays.	52.50	VI
7.	Encourage farmers to shift from chemical-based farming to organic methods using compost and bio-fertilizers.	42.50	VII

As revealed, the major suggestions offered by respondents to mitigate environmental degradation were: Organize training and awareness programs to educate farmers about sustainable agricultural practices at local level(I), Practice crop rotation and include diverse crops to maintain soil fertility and reduce pest outbreaks (II), Conduct regular soil testing and apply fertilizers as per recommendation (III), Plant more trees around farms and adopt agro-forestry practices to prevent erosion and improve biodiversity (IV), Promote the use of drip and sprinkler irrigation systems to reduce water wastage and improve efficiency (V), Reduce the dependence on chemical pesticides by adopting natural alternatives like neem-based sprays (VI) and Encourage farmers to shift from chemical-based farming to organic methods using compost and bio-fertilizers (VII).

5. Conclusion

The findings indicate that farmers possessed a good understanding of the primary causes of environmental degradation. They pointed out that water contamination from pesticide use, excessive agrochemicals, deforestation, crop burning and the overuse of fertilizers are some of the biggest environmental problems. On the losses side, they reported facing unpredictable weather, poor water quality, declining soil fertility, frequent droughts and damage from floods all of which hurt their farm productivity and livelihoods. These insights highlight how important it is to adopt eco-friendly farming methods and provide focused support to help reduce environmental damage. The major suggestions as offered by respondents were: organize training and awareness programs at local level to educate farmers, practice crop rotation and include diverse crops to maintain soil fertility, conduct regular soil testing and apply fertilizers as per requirement to avoid overuse and plant more trees around farms and adopt agro-forestry practices to prevent erosion and improve biodiversity.

Conflict of Interest

The authors declare no conflicts of interest related to the research presented in this article.

References

1. Choudhary A. Adverse health effects of organophosphate pesticides among occupationally exposed farm sprayers: A case study of Bhopal Madhya Pradesh, India. *Asian Journal of Biomedical and Pharmaceutical Sciences*. 2014; 4(35):29-34.
2. Fahimuddin F. Diversification of agriculture in Uttar Pradesh: Need for policy reorientation. *Journal of Rural Development*. 2013; 29(2):141-156.
3. Kerlinger FN. Foundation of Behavioral Research, New Delhi, Surjeet Publication, 1976, 198-204.
4. Parikh N & Chauhan NM. Correlation between profile and knowledge level of farmers about global warming effect on agricultural sectors. *Gujarat Journal of Extension Education*. 2021; 32(2):95-100.
5. Rao KS, Sharma MK & Pandey S. Status of crop diversification in Uttar Pradesh: Evidence from primary data. *Journal of Pharmacognosy and Phytochemistry*. 2019; 8(3):12-18.
6. Thakur SS, Chandel R & Narang MK. Studies on straw management techniques using paddy-straw chopper cum spreader along with various tillage practices and subsequent effect of various sowing techniques on wheat yield and economics. *Agricultural Mechanization in Asia*. 2018; 49(2):52-67.