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Awareness of mango growers regarding agricultural pollution

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Abstract

The Study on “Awareness of mango growers regarding agricultural pollution” was conducted in Ratnagiri and Sindhudurg district of South Konkan region of Maharashtra state in India. This study assessed mango growers’ knowledge about the specific components or farming practices that put up to agricultural pollution. For this study districts, tahsils and villages were selected on the basis of maximum area under mango cultivation. The data was collected by personal interview using pretested standardized schedule with sample size constituted of 120 respondents. It was observed Majority (100.00 per cent) each of the respondents were aware about some pesticides persist for long time in the soil, bio- fertilizers were ecofriendly, open burning of harvest waste leads to black clouds which can causes suffocation to human beings, human system if exposed to a very high noise it is harmful, high noise causes rapid heart beating, regular high noise can cause deafness, dead animals cause environmental pollution and FYM mixing in soil is safe for human health as well as for soil micro-organisms and biogas plant slurry is useful for manuring without effecting environment. It was found that majority (98.33 per cent) of the respondents were aware about salt and silt can deposit on fertile soil through irrigation water. It was noticed that majority (99.17 per cent) of the respondents were aware about waste of food processing units can be used in soil to increase fertility without effecting quality of soil. Nearly one third (32.50 per cent) of the respondents had ‘high’ awareness regarding agricultural pollution.

Keywords: Agricultural pollution, awareness, mango growers.

Introduction

Sustainable agricultural practices are vital for the future of mango farming, especially in the face of environmental challenges related to agricultural pollution. This pollution damages ecosystems and threatens human health through various byproducts of farming. Key issues include excess fertilizer runoff, pesticide contamination, and polluted water sources, all of which pose significant risks. Additionally, livestock waste contributes to greenhouse gas emissions and deteriorates air quality, while improper disposal of dead animals and fruit processing waste can contaminate local water resources. The accumulation of salt and silt on fertile soil also negatively affects crop production. Furthermore, the use of heavy machinery can lead to noise pollution and soil compaction. To address these issues, it is crucial to implement effective management strategies that reduce pollution and promote environmental health. Financial incentives, such as carbon credits, can encourage growers to adopt sustainable practices, benefiting both agriculture and the ecosystem as a whole.

Specific objectives of the study

To determine the extent of awareness among mango growers about agricultural pollution

Methodology

The research study was conducted in Ratnagiri and

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Sindhudurg districts of South Konkan region of Maharashtra state in India. The Ex-post-facto research design of social research was used for the present investigation. For the present study multistage sampling technique was used for selecting districts, tehsils, and villages. In the first stage, the two leading districts, Ratnagiri and Sindhudurg, were chosen from the Konkan region. In the second stage, two tehsils were selected from each district on the basis of maximum area under mango cultivation. Ratnagiri and Rajapur tahsils were selected from Ratnagiri district and Devgad and Malvan tehsils were selected from Sindhudurg district. The third stage involved selecting villages from each of the chosen tehsils. Three villages were selected from each tehsil. Total 120 respondents were selected from selected tehsils by simple random sampling. Data were collected by personally interviewing the respondents with the help of pre-tested and structured interview schedule. The data collected were tabulated, analysed and the statistical tools namely mean, standard deviation, percentage, frequency, arbitrary method and Karl Pearsons coefficient of correlation was employed for interpretation of the findings.

Results and Discussion

The findings of the study as well as relevant discussion given below,

1. Extent of awareness among mango growers about agricultural pollution

Awareness is knowledge that something exists or understanding of situation or subject at present time based on information or experience. For measuring awareness of farmer regarding agricultural pollution the awareness test developed by Dhillon (2001) [2] was used with slight modification. And then awareness level was categorized and results was presented in following Table 1 and depicted in Figure 1.

Table 1: Distribution of respondents according to their extent of awareness

Sl. No.	Extent of awareness	Respondents (n= 120)	
		Frequency	Percentage
1	Very low (Up to 39)	16	13.33
2	Low (40 to 42)	18	15.00
3	Medium (43 to 46)	32	26.67
4	High (47 to 48)	39	32.50
5	Very high (49 and above)	15	12.50
	Total	120	100.00
Mean = 43.75 S.D = 4.39			

Table 1. Indicated that nearly one third (32.50 per cent) of the respondents had 'high' awareness regarding agricultural pollution followed by 26.67 per cent of the respondents had 'medium' awareness regarding agricultural pollution, while 15.00 per cent of the respondents had 'low' awareness and 13.33 per cent of the respondents had 'very low' awareness regarding agricultural pollution. Whereas 12.50 per cent of the respondents had very high awareness regarding agricultural pollution. So, about 71.67 per cent of the respondents had medium to very high awareness about the agricultural pollution.

That means when agricultural operations are sustainably managed, they can preserve and restore critical habitats, help to protect watersheds, and improve soil health, water quality and air quality too. But unsustainable practices have serious impact on growers and environment. Here in research area, with seeing the same or equal somehow

proportion of growers in awareness category i.e. from very low to very high is thoughtful thing in the future of mango growing basket. Thus, help for sustainable resource management is increasingly urgent. Identification and implement better management practices that may protect environment and producer's bottom line with creating financial incentives to encourage biodiversity conservation with backup of agricultural policy like carbon credit etc.

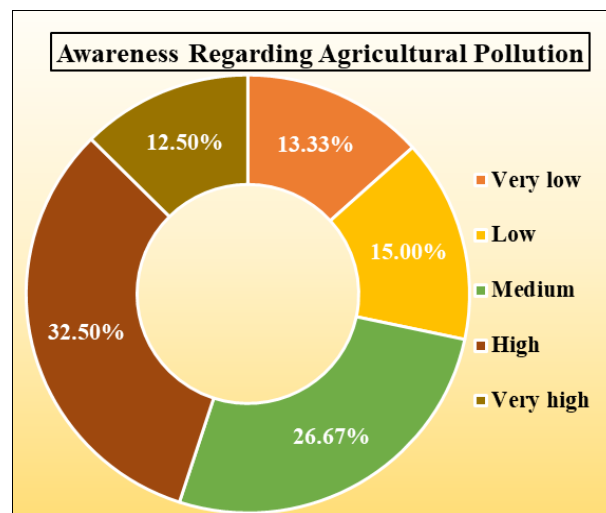


Fig 1: Distribution of respondents according to their overall awareness regarding agricultural pollution

2. Component wise extent of awareness among mango growers about agricultural pollution

The data pertaining component wise awareness by the mango growers were collected. The component wise information regarding these aspects is given in tables.

2.1 Extent of awareness among mango growers about pesticide pollution

The data pertaining awareness about pesticide pollution among mango growers were collected. The information regarding these aspects is given in Table 2.

Table 2: Distribution of respondents according to their awareness about pesticide pollution

Sl. No.	Awareness about pesticides pollution	Respondents (n= 120)	
		Frequency	Percentage
1	Excessive use of pesticides causes leaching of poisonous chemicals in ground water.	119	99.17
2	Pesticides do not affect adversely on friendly insects	91	75.83
3	Some pesticides persist for long time in the soil	120	100.00
4	Excessive use of herbicides decreases the population of soil microorganism	92	76.67
5	Pesticides pollution may cause Asthma and other illness in human beings	120	100.00
6	Pesticide having residual effect of in fruit	120	100.00

Table 2 Indicated that majority (100.00 per cent) each of the respondents were aware about some pesticides persist for long time in the soil, pesticides pollution may cause asthma and other illness in human beings and pesticide having residual effects in fruits followed by (99.17 per cent) of the respondents which were aware about excessive use of pesticides causes leaching of poisonous chemicals in ground water, whereas (76.67 per cent and 75.83 per cent) of respondents were aware about excessive use of herbicides

decreases the population of soil microorganism and pesticides do not affect adversely on friendly insects respectively.

2.2 Extent of awareness among mango growers about fertilizer pollution

The data pertaining awareness about fertilizer pollution among mango growers were collected. The information regarding these aspects is given in Table 2.

Table 2: Distribution of respondents according to their awareness about fertilizer pollution

Sl. No.	Awareness about fertilizers pollution	Respondents (n= 120)	
		Frequency	Percentage
1	Excessive use of fertilizer decreases productivity	119	99.17
2	High concentration of nitrate in drinking water causes methemoglobinemia in infant	73	60.83
3	Nitrate concentration increases day by day in drinking water.	95	79.16
4	Bio fertilizers are eco-friendly	120	100.00
5	Gases releases from nitrogenous fertilizers, which make air pollution.	76	63.33
6	Residues of nitrogenous chemicals in diet effects adversely on our nerve system.	107	89.17

Table 2 Indicated that majority (100.00 per cent) of the respondents were aware about bio fertilizers were ecofriendly followed by (99.17 per cent and 89.17 per cent) of the respondents which were aware about residues of nitrogenous chemicals in diet effects adversely on our nerve system, whereas (79.16 per cent) of respondents were aware about excessive use of fertilizer decrease productivity and nitrate increase day by day in water. While (63.33 per cent and 60.83 per cent) of the respondents were aware about

gases releases from nitrogenous fertilizer and high concentration of nitrate in drinking water causes methemoglobinemia in infant respectively.

2.3 Extent of awareness among mango growers about pollution from harvest waste

The data pertaining awareness about pollution from harvest waste among mango growers were collected. The information regarding these aspects is given in Table 3.

Table 3: Distribution of respondents according to their awareness about pollution from harvest waste

Sl. No.	Awareness about pollution from harvest waste	Respondents (n=120)	
		Frequency	Percentage
1	Open burning of harvest waste leads to black clouds which can causes suffocation to human beings.	120	100.00
2	Harvest waste if not properly disposed can spread diseases to succeeding crops.	112	93.00
3	Open burning of harvest waste impairs the quality of soil.	88	73.33
4	Harvest waste burn in soil reduces the effect of pesticides	101	84.17
5	Open burning of harvest waste reduced the pest attack.	118	98.33
6	Burning of harvest waste in open space are most suitable methods	111	92.50

Table 3 Indicated that majority (100.00 per cent) of the respondents were aware about open burning of harvest waste leads to black clouds which can causes suffocation to human beings followed by 98.33 per cent of the respondents which were aware about open burning of harvest waste reduced the pest attack, whereas 93.00 per cent and 92.50 per cent of respondents were aware about harvest waste if not properly disposed can spread diseases to succeeding crops and burning of harvest waste in open space are most suitable methods respectively. Also 84.17 per cent and

73.33 per cent of the respondents were aware about harvest waste burn in soil reduces the effect of pesticides and open burning of harvest waste impairs the quality of soil respectively.

2.4 Extent of awareness among mango growers about noise pollution

The data pertaining awareness about noise pollution among mango growers were collected. The information regarding these aspects is given in Table 4.

Table 4: Distribution of respondents according to their extent of awareness about noise pollution.

Sl. No.	Awareness about noise pollution.	Respondents (n=120)	
		Frequency	Percentage
1	Human system if exposed to a very high noise it is harmful	120	100.00
2	High noise causes rapid heart beating.	120	100.00
3	Regular high noise can cause deafness	120	100.00
4	High noise causes frustration	115	95.80
5	Noisy machines should not be used more than 2-4 hrs./day	101	84.17
6	Loud noise can cause peptic ulcer and allergy.	20	16.67

Table 4 Indicated that majority (100.00 per cent) each of the respondents were aware about human system if exposed to a very high noise it is harmful, high noise causes rapid heart beating, regular high noise can cause deafness followed by 95.80 per cent of respondents were aware about high noise causes frustration, while 84.17 per cent of the respondents were aware about noisy machines should not be used more than 2-4 hrs/day and only 16.67 per cent of the respondents were aware about loud noise can cause peptic ulcer and

allergy.

2.5 Extent of awareness among mango growers about pollution from salt and silt drain by irrigation water

The data pertaining awareness about pollution from salt and silt train by irrigation water among mango growers were collected. The information regarding these aspects is given in Table 5.

Table 5: Distribution of respondents according to their extent of awareness about from salt and silt drain by irrigation water

Sl. No.	Awareness about soil pollution by salt and silt drained by irrigation water	Respondents (n =120)	
		Frequency	Percentage
1	Salt and silt can deposit on fertile soil through irrigation water	118	98.33
2	There is need to test the quality of irrigation water before using it for irrigation	113	94.17
3	Salt and silt deposited on fertile soil effect adversely on crop production	112	93.33
4	Saline water hampers crop growth by affecting soil physio-chemical properties	103	85.83
5	Quality of irrigation water effects on crop production	112	93.33
6	Bad quality of irrigation water makes soil infertile	117	97.50

Table 5 Indicated that majority (98.33 per cent) of the respondents were aware about salt and silt can deposit on fertile soil through irrigation water followed by 97.50 per cent of the respondents which were aware about bad quality of irrigation water makes soil infertile, whereas 94.17 per cent of respondents were aware about there is need to test the quality of irrigation water before using it for irrigation. Also 93.33 per cent each of the respondents were aware about salt and silt deposited on fertile soil effect adversely on crop production and quality of irrigation water effects on

crop production, while 85.83 per cent of the respondents were aware about saline water hampers crop growth by affecting soil physio-chemical properties.

2.6 Extent of awareness among mango growers about pollution from dead animals

The data pertaining awareness about pollution from dead animals among mango growers were collected. The information regarding these aspects is given in Table 6.

Table 6: Distribution of respondents according to their extent of awareness about pollution from dead animals

Sl. No.	Awareness about pollution from dead animals	Respondents (n =120)	
		Frequency	Percentage
1	Dead animals cause environmental pollution	120	100.00
2	Microbes spread from dead animals can cause infection to other healthy animals	120	100.00
3	Odour produced from dead animals has ill effect on human health	120	100.00
4	Dead animals increase fertility of soil if decomposed into soil.	120	100.00
5	Dead animals impair the quality of ground water if thrown in well or tank	120	100.00
6	Carcass of dead animals is a ready source of infection.	120	100.00

Table 6 Indicated that majority (100.00 per cent) each of the respondents were aware about dead animals cause environmental pollution, microbes spread from dead animals can cause infection to other healthy animals, odour produced from dead animals has ill effect on human health, dead animals increase fertility of soil if decomposed into soil, dead animals impair the quality of ground water if thrown in well or tank and carcass of dead animals is a

ready source of infection.

2.7 Extent of awareness among mango growers about pollution from fruit processing waste

The data pertaining awareness about pollution from fruit processing waste among mango growers were collected. The information regarding these aspects is given in Table 7.

Table 7: Distribution of respondents according to their extent of awareness about pollution from fruit processing waste

Sl. No.	Awareness about pollution from fruit processing waste	Respondents (n =120)	
		Frequency	Percentage
1	Food processing waste cause serious problem of pollution.	113	94.17
2	Elements release from food processing waste impair quality of irrigation water	117	97.50
3	Food processing waste spread disease among humans	114	95.00
4	Waste of food processing units can be used in soil to increase fertility without effecting quality of soil.	119	99.17
5	Use of food processing waste as irrigation water-can cause environmental pollution.	118	98.33
6	Food processing waste can destroy the biotic life	117	97.50

Table 7 Indicated that majority (99.17 per cent) of the respondents were aware about waste of food processing units can be used in soil to increase fertility without effecting quality of soil followed by 98.33 per cent of the respondents which were aware about use of food processing waste as irrigation water-can cause environmental pollution, whereas 97.50 per cent each of respondents were aware about elements release from food processing waste impair quality of irrigation water and food processing waste can destroy the biotic life. Also, 95.00 per cent each of the

respondents were aware about food processing waste spread disease among humans, while 94.17 per cent of the respondents were aware about food processing waste cause serious problem of pollution.

2.8 Extent of awareness among mango growers about pollution from livestock waste

The data pertaining awareness about pollution from livestock waste among mango growers were collected. The information regarding these aspects is given in Table 8.

Table 8: Distribution of respondents according to their extent of awareness about pollution from livestock waste

Sl. No.	Awareness about pollution from livestock waste	Respondents (n =120)	
		Frequency	Percentage
1	Livestock waste cause pollution.	109	90.83
2	FYM mixing in soil is safe for human health as well as for soil micro-organisms	120	100.00
3	Cattle and poultry waste can spread infection in human beings.	115	95.83
4	Biogas plant slurry is useful for manuring without effecting environment.	120	100.00
5	Chemicals from waste material of cattle and poultry shed effect adversely on quality of surface and ground water.	115	95.83
6	Toxic gases released from poultry waste causes air pollution.	83	69.17

Table 8 Indicated that majority (100.00 per cent) each of the respondents were aware about FYM mixing in soil is safe for human health as well as for soil micro-organisms and biogas plant slurry is useful for manuring without effecting environment followed by 95.83 per cent each of the respondents which were aware about cattle and poultry waste can spread infection in human beings and chemicals from waste material of cattle and poultry shed effect adversely on quality of surface and ground water, whereas 90.83 per cent of respondents were aware about livestock waste cause pollution. Also, 69.17 per cent each of the respondents were aware about toxic gases released from poultry waste causes air pollution.

Conclusion

The findings indicate that awareness of agricultural pollution among respondents varies significantly. A significant portion of respondents demonstrated high awareness, while others showed medium awareness. Additionally, some had low or very low awareness, with a smaller group exhibiting very high awareness. Overall, a large majority of respondents displayed medium to very high awareness about agricultural pollution, suggesting that most individuals surveyed have a positive understanding of the issue and awareness about agricultural pollution.

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