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THE IMPCT OF RANJANGOAN INDUSTRIAL EFFLUENTS DISCHARGED ON AGRICULTURE FIELD AT GHOD RIVER BASIN IN SHIRUR TAHSIL OF PUNE DISTRICT

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ABSTRACT:

A study was conducted in to evaluate the external effect of Industrial development. Ranjangoan MIDC is known Five Star Industrial Estate in Maharashtra. But what tarnishes this name is the huge polluted water discharged from this estate. The sewage from Ranjangoan M.I.D.C. destroyed all the water sources in that area. Based on the extent of external impact of land water resources, data were obtained from a total of 100 households, 25 each in two affected and two unaffected villages.

Keywords: - Ranjangoan, M.I.D.C., Agriculture, Water effluent, Pollution

INTRODUCTION:

Maharashtra is known as the most industrially developed state in the country. The establishment of M.I.D.C. in 1952 aimed to foster industrial development in Maharashtra. Industrialization in Maharashtra was boosted in the 1990s after the New Economic Policy was implemented in India. In 1995–96, an industrial estate was established at Ranjangoan Ganpati in Shirur Taluka of Pune District. There are established, world-famous companies like L.G., Whirlpool, Hair, Apollo, ITC, PepsiCo, MEPL, Bajaj Electronic, Tata Electronic, Jabil, Fiat, etc. These companies attracted workers from all over the country, including Maharashtra. Within a short time, Ranjangoan M.I.D.C. became well known throughout the country as a five-star industrial estate. The pace of urbanization increased tremendously with the establishment of basic industries and other footloose industries and businesses related to them. Due to the industrial development of the area, the villages of Shirur, Ranjangoan Ganpati, Karegoan, Shikrapur, Kondhapuri, Talegoan Dhamdhere, Khandala, Babhulsar, Nimgoan Bhogi, Dhok Sangavi, Sone Sangavi, Kardelwadi, Saradwadi, etc. have undergone economic development. Due to this M.I.D.C., the local people got a large amount of employment, various

industries and businesses developed in major areas, and the economy of villages in the region changed and the villages prospered. But due to the polluted water released by the companies in this industrial estate, all the water sources in the area were heavily contaminated. Effluent released without special treatment affects the villages in that region.

OBJECTIVE OF THE STUDY:

1. To explain the impact of Industrial effluents from Ranjgaon MIDC on agriculture in affected and non-affected villages of Ghod river basin in Shirur taluka.
2. To provide suggestions for improvement of agriculture and environmental degradation caused by discharge of Ranjgaon industrial effluents.

REVIEW OF LITERATURE:

Mohan Das and Muniyandi (2013) studied the industrial development of Tirupur and its impact on the Noyyal river basin. Tirupur's textile industry's untreated effluents affect agriculture in the Noyyal river basin. Only 39.1% of the area affected by the effluent of the Noyyal River is under cultivation, and the remaining 64.09% is fallow. The use of untreated runoff water from the Noyyal river basin for crop irrigation has adversely affected agricultural land and increased environmental pressure by damaging the environment. Effluently affected villages' farmers' net income is very poor compared to UN-affected villages.1

Prakash Nellit (2005) studied the industrial growth and environmental degradation of Tirupur. A Case Study of Industrial Pollution in Tirupur from 1999 to 2005. In many affected areas, farmers did not cultivate rice and suffered losses. The value of productivity loss per acre is estimated at Rs. 7362 per acre in the most affected irrigated area and Rs. 2910 per acre in the non-affected area. Using GIS, out of the total pollution-affected area, 14, 63,389 acres are cultivable, out of which 36,139 acres are harmful, 53,968 acres are critical, and 56,312 acres are normal for agriculture. [2]

Senthilanathan (2004) studied the environmental status report at the micro-level of the Noyyal basin. Most of the industries are located in Tirupur, on the banks of the Noyyal River. These industries are particularly water-consuming in dying and bleaching units. The majority of the industrial effluents are discharged incompletely into the Noyyal River. This ultimately has a serious impact on the surface water system of the river. The water quality characteristic of the surface sample of the Noyyal River was found to be high and above the threshold. Chemical composition is likely to affect the nature and quantity of wash water discharged

into it, as well as biotic and abiotic processes in the water body. [3]

RESEARCH METHODOLOGY:

For the present study, data were collected from a primary field survey conducted in July 2023.Google Forms were used to some extent for this. To fulfill the set objectives for the study, two affected villages and two non-affected villages were selected from the area. Two villages were selected from a cluster of villages affected by effluents at a distance of 5 km from the industrial estate. In this, one village in the north and another village in the east were taken. Two villages were selected from non-affected areas. These villages are located at a distance of 6 km from the industrial estate. Agriculture in this village is not affected by industrial effluents.90 respondents were selected through random sampling.

IMPACTS ON CULTIVATION:

Studying the impact of agriculture is essential for ensuring food security, promoting sustainable development, protecting the environment, safeguarding public health, and informing policies that balance economic growth with social and environmental responsibilities. It is a multidisciplinary endeavor that requires collaboration among scientists, policymakers, farmers, and communities to address current challenges and build a resilient agricultural future. Industrial effluents, sewage discharge, and agricultural runoff can contaminate river water with chemicals such as heavy metals (e.g., lead, mercury, and cadmium), pesticides, fertilizers, and organic pollutants (e.g., PCBs and dioxins). When contaminated water is used for irrigation, these pollutants can accumulate in the soil and crops.

The table below shows the size and crop distribution of farms in the Ghod River basin.

Sep-2023

Table: Net Return Of Earnings From Average Per Acre Crops Yield At Ghod River Basin

Crop	Market Price	Affected villages						Not affected villages					
		Yield per acre	Per acre Income	Per acre Expenditure	Per acre Profit /loss	Total land	Net income	Yield per acre	Per acre income	Per acre expenditure	Per acre Profit /loss	Total land	Net income
	(Rs.)		(Rs.)	(Rs.)	(Rs.)	Acre	(Rs.)		(Rs.)	(Rs.)	(Rs.)	Acre	(Rs.)
	1	2	3	4	5	Acre	7	8	9	10	11	12	13
			1x2		3-4		5x6		1x8		9-10		11x12
Onion (Kg)	15	0	0	0	0	0	0	7500	112500	62000	50500	45	2272500
Sugarcane (tone)	2700	0	0	0	0	0	0	54	145800	70000	75800	38	2880400
Wheat (Kg))	25	750	18750	16000	2750	45	123750	1800	45000	16000	29000	25	725000
Bajara (Kg)	24	430	10320	13000	-2680	26	-69680	1510	36240	13000	23240	22	5511280
Jawar (Kg)	34	570	19380	17000	2380	54	128520	0	0	0	0	0	0
Mung (Kg)	60	0	0	0	0	0	0	350	21000	13000	8000	14	112000
Ground Nuts (Kg)	70	0	0	0	0	0	0	1100	77000	23000	54000	15	810000
Total earning						125	1825590					159	12311180
Per acre earning							14604						77428
Different between effluent affected and not affected village farmers per acre earning is Rs. 62824													

As shown in the figure, cash crops like onion and sugarcane in polluted villages have been displaced, while food grain production has declined. The average yield of wheat per acre in effluent-affected areas is 750 kg, while in non-fluent-affected villages the yield is up to 1800 kg. Jawar and Bajara production has significantly decreased in the polluted village; groundnut and moong have been ejected; as cash crops bring in higher prices, nearby villages' fields of onion and sugarcane are expanding; however, these crops have been forced to relocate to the polluted village. As the lands affected by effluent water become infertile, the farmers of this village tend to avoid high-cost cash crops and take up production of food grains like wheat, bajara, and jawar, as the profit from these crops is less, but it solves the problem of animal fodder. On the other hand, sugarcane, mung bean, and groundnut crops are grown in villages where there is no pollution problem. This served the dual purpose of profit and fodder for animals. Water pollution has the greatest impact on the orange crop. This village used to have orange groves. Farmers used to receive production guarantees as a consequence. As industrialization increased, the amount of pollution also increased enormously, due to which all sources of water, wells, ponds, streams, and rivers were damaged in the area. The orange crop was expelled from this area, and the farmers in the area suffered huge financial losses.

CROP PRODUCTIVITY:

The contaminated water of the companies at Ranjangaon MIDC, a five-star industrial estate in Shirur taluka, has been rendering farmers' land infertile for the past few years, resulting in the deaths of several animals. The contamination of water in streams, drains, wells, and borewells has also created serious issues with drinking water. In villages where pollution is not an issue, farmers grow cash crops like onion sugarcane, which has an average production of 75 quintals; at a price of Rs. 15 per kg, the yield is 112,500. The production cost of the onion crop is 62000; after deducting this cost of production, the net profit per acre is Rs. 50,500. When it comes to sugarcane, the average production per acre is 54 metric tons, or Rs. 2700. The average yield per acre, assuming the ton rate is achieved, is 145800. The average profit from sugarcane is Rs 75800 per acre after deducting the average cost of production (70000). In light of all these cash crops, the farmers in the villages afflicted by effluent water have lost a significant amount of money. Considering food grain crops, the production of wheat per acre in villages impacted by pollution is 750 kg, whereas the output of wheat per acre in communities unaffected by pollution

can reach 1800 kg. Wheat has an average rate of 25. The average profit from wheat for farmers in non-polluted villages is Rs. 29,000, whereas the income per acre for farmers in pollution-affected areas is Rs. 18750–16000 after production costs are subtracted. When it comes to the bajara crop, the average annual production per acre in the non-polluted villages is 1,510 kg, whereas the average annual production in the polluted villages is only 430 kg. In this case, the income of the bajara farmers in the polluted village is less than the cost of production; the farmers are unable to grow the crop, but they purchase millet flour for their animals' feed. In the polluted village, the cash crops, including mung beans, groundnuts, onions, and sugarcane, have practically vanished. The Nimgaon Bhogi area was formerly well-known for its orange groves, but, according to the responses, rising water pollution has forced the orange crop out of this village.

The farmers in this village suffer a significant financial loss as a result. Water from streams and drains in Nimgaon Bhogi, Annapur, Kardilwadi, Karegaon, Shirur Rural, Shirur City, and Sardwadi is directly combining with the Ghod River as a result of the contaminated water discharged by the industries in Ranjangaon MIDC without any sort of processing. The villagers claim that because of its extreme pollution, this water is useless. There will be itchy sores on your body if you wash in this filthy water. The villagers claim that drinking this water has killed numerous animals.

CONCLUSION AND SOLUTION:

The utilization of untreated wastewater from the Ghod river basin for crop irrigation has resulted in detrimental effects on agricultural areas and heightened environmental stress due to the destruction of the ecosystem. According to the study, the majority of rural villages did not rely on river water for irrigation, drinking, fishing, laundry, or animal bathing. There is a Ghod dam at Chinchani on the Ghod River, and nearly twenty-five villages in the area, as well as Shrigonda town in the Ahmednagar district, depend on the Ghod Dam for irrigation and drinking water. In addition, water from this dam is used to supply the Ranjangaon Industrial Estate.

The health of thousands of villagers in the area and hundreds of acres of agricultural land may become unproductive if this pollution is not stopped. As a result of the effluent water flowing down the stream and mixing with the Ghod River, the pollution must be stopped immediately. Companies in the Ranjangaon Industrial Colony need to take steps to prevent this pollution by treating used water and reusing it for construction and other purposes. Otherwise, the health of thousands of villagers in the area and hundreds of

acres of agricultural land may become unproductive. Therefore, the government, MIDC, and pollution board should take appropriate action to stop this pollution immediately as the polluted water flows through the canal and mixes with the Ghod River.

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