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WATER QUALITY PARAMETERS OF GROUND WATER FROM SELECTED VILLAGES FROM AHMEDNAGAR DISTRICT, MAHARASHTRA, INDIA

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Abstract:

Present paper focused quality of water samples from bore wells, dam in order to find out contaminants and physical and chemical parameter present in water from selected villages like Tambhere, Wadner, Kangar, Rahuri (Mula Dam), Loni and Nimgaon Jali. The natural quality of ground water tends to be contaminated by human activities due to pesticides, chemical fertilizers in rural areas so there is need to check out water quality from different locations for human welfare. The parameters studied were p^H , Total hardness, Sulphate, Turbidity, TDS (Total Dissolved Solids), Sodium, Magnesium, Calcium. EMF (electromotive force). Electrochemical conductance, Temperature The Ion concentrations were expressed in mg/L. The study of different water samples reveals that study of quality of ground water. Six sample were selected for study.

Key Words: Hardness, TDS, PH, EC, physio chemical parameters.

Introduction:

"Water is life" and very important for existence of living organisms on the earth. Therefore it is very necessary and useful to check out quality of water in our area around us in our environment. The utilization of ground water for domestic, industrial and irrigation purpose increases day by day[1-3]. Sources of water is mainly rainfall which increases level of water in the ground. But due to different parameters present in different places changes water quality which water perculates into the soil. As water is universal solvent and in the fields of agriculture is the important factor for pollution of water as it is use various chemicals on crops in very large quantity. Today the ground water contamination is widely taking place because of either natural reasons or human actions[4-5]. Thus it requires to regular monitoring of water quality to various ways and means to maintain it. Assessment of water quality parameter in different areas. From this we can also be compare water ingredients in irrigated area and dry area[6-10].

Study Area:

Rahuri Tahsil is centrally located in the irrigated zone of Ahmednagar district. The distribution of rainfall in Rahuri and Sangamner Tahsil is uneven and average rainfall is 920 mm. The tahsils receives its most of rains from southwest monsoon season, here the maximum temperature is 28^0c to 41^0 C and sometimes it is so cooled in winter and sometime it goes upto 45^0 C during summer season. Rainfall, canal, dug wells, bore wells are the important modes of irrigation being use in these thasils.

Objectives:

The main objective of present study the physico-chemical characteristics of ground water in different villages from our area.

1. To find out physical and chemical characteristics of ground water.
2. To recognize ground water quality for irrigation.

Data Sources and Methodology:

Primary information used for the research paper five villages and one dam is selected for this field work and sampling collection in the primary information and samples have been taken from bore wells from five villages from different areas and one sample is from Mula dam.

Materials and Methods:

i. Ground water samples were collected during the month of January 2022 from randomly selected five villages located in downstream area of Pravaranagar and a dry region. Collected water samples from Villages as Tambhere, Wadner, Kangar Loni, Nimgaon Jali and Rahuri (Mula Dam).
ii. Collected samples are filled in sterilized cleaned plastic polythene bottles and preserved according to standard method.

Experiment:

1. Water samples were collected in cleaned polyethene container and preserved. The pH value of the ground water sample under investigation is measured using Elico pH meter was standardized by buffer 4.0 pH and 9.2 pH
2. Total Hardness of water sample was determined by complex metric titration using EDTA by using Erichrome Black T as an indicator.
3. Sodium, potassium, calcium were estimated using flame photometer .
4. SO_4^{2-} detected by using UV visible spectrophotometer.
5. The turbidity of water samples were measured by using Nephelo tubidimetry.
6. Electrical conductance determined by conductometer.

Table 1: Analysis data of bore- well samples from different locations.

Sr. No	Parameter / Sample	Sample 1- Tambhere	Sample 2 Wadner	Sample 3 Kangar	Sample 4 Mula Dam	Sample 5 Loni	Sample 6 Nimgaon Jali
1	pH	6.92	7.42	6.97	7.76	6.47	6.15
2	Total Hardness (mg/L)	398	408	582	260	442	320
3	Sodium (mg/L)	13.02	92.3	170.1	210.5	142.2	192.0
4	Potassium (mg/L)	45.0	14.2	26.8	43.2	32.4	68.2
5	Calcium (mg/L)	46.2	30.2	70.2	65.2	110	133
6	Turbdity (NTU)	130	149	190	170	119	159
7	EMF(V)	89	74	96	88	111	108
8	TDS (mg/L)	528	612	512	170	530	481
9	Sulphate (mg/L)	27.8	12.4	57.2	43.6	16.0	47.3
10	Temperature (^{0}c)	18	18.3	18	18.1	18	18
11	Electrical Conductance (EC) µmho/cm at 25^0 C	1102	1297	1303	1336	1142	1196

Result and Discussion:

Water quality[11] indicated by experimental study

1. The pH of water samples ranges from 6.14 to 7.75. The dam water has high pH than other samples. It is maximum alkaline.
2. Total hardness f ground water is larger than desirable limit (300 mg/L) except dam water.
3. The Sodium content water samples varied from 92.3 mg/L to 210.5 mg/L.
4. The temperature of ground water sources is measured is 18^{0}c
5. He electrical conductivity found is 1102 to 1336 µmho/cm at 25^{0}c. Highest electrical conductivity is found at water sample of Mula Dam i.e. 1335 µmho/cm at 25^{0}c and lowest conductivity is in village Tambhere i.e. 1102 µmho/cm at 25^{0}c.
6. The TDS ranges from 170 to 612 mg /L. The dam water shows less TDS i.e. 170 mg/L
7. The turbidity of water samples ranges from 119 NTU to 190 NTU. The water of Kangar village is more turbid.
8. Sulphate content ranges from 12.4 mg/L to 57.2 mg/L.

Future Scope for research:

The present work confines itself to study of parameters of ground water quality. However it is essential to carry out the in-depth study of quality parameters of ground water to be used for irrigation in the study area.

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Conclusion:

The physico-chemical information obtained by analyzing the water samples determined that ground water quality in study area is moderately safe for irrigation and drinking purpose with some variations. In general, it varies from village to village. This qualitative variation in ground water may be result of variation in geographical background. Thus it is suggested that ground water in irrigation area should be analyzed before using it for irrigation.. Thus the quality of ground water in study area should be improved slightly and maintained properly.

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