ISSN: 2455-1848

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & GROWTH

VOLUME-I ISSUE-I NOVEMBER-2015

WWW.IJIRG.COM

WATER QUALITY EFFECT ON PLANT GROWTH IN CASE OF TEKANPUR AND NEAR BY VILLAGES, GWALIOR, M.P. (INDIA)

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Abstract

Many species of plants thrive only in certain conditions, and a large shift in pH can kill them off or stunt their growth. Some plants are more sensitive than others; palms, spider plants and dracaenas are quite sensitive to fluoride. The fluoride acceptable in tap water is still more than plants can handle. Additionally, tap water can also contain salts for softening which can be harmful. A build-up of a white film crust forms on soil, this is a sign water has too much sodium- a nutrient plants despise. Finally, water that has the wrong pH level can damage plants. Some plants cannot tolerate chlorinated tap water, while other plants have a difficult time with soft water.

Keywords: *pH level, palms, spider plants and nutrient plants*

Introduction

Water is never 'pure' in a chemical sense. It contains various kinds of impurities such as dust particles, dissolved gases, dissolved minerals, microscopic paints and animals, suspended impurities and bacteria. These are natural impurities derived from the atmosphere, catchments area and soil. Besides this, there are various other reasons by which water i9 polluted. The upland surface water derives its impurities from the catchments area, the sources being human habitations and animal keeping or grazing. It is therefore very necessary to keep the catchments area free from human or animal intrusion. The general belief of purity in the water of mountain streams is often untrue. Even if there are no human habitations there is still a possibility of contamination caused by wild animals the impurities of river water are derived from surface washings, sewage and silage water, industrial and trade wastes, and drainage from agricultural areas. The

customs and habits of the people like bathing, animal washing and disposal of the dead body all add to the pollution of water. 'On the bank of the tank the ignorant and dirty people pass motion (stool) and use them as latrines. In some cases the liquid refuse from latrines, cattle sheds and the foul contents of drains and from similar places are flown in to the tanks. The tank water is polluted very easily than the well water. If the mouth of the well is just below the level of the surface of the ground, then there is enough possibility of water being polluted. In such type of wells the washing of the street, latrines, the foul contents of drains and the discharges of animals easily enter in to the well and as a result of which water is polluted. In majority of the cases it is a common practice in our country that very often people wash their dirty clothes and bathe
Themselves while standing over well and use dirty vessels and dirty ropes for the purpose of drawing water. Moreover, the wells are not cleaned out for years together and mud, broken pots, pieces of ropes and other refuses in consequence collect at the bottom and stop the spring from which the water flows. These are some of the ways how the water is polluted. Industry is one of the greatest sources of pollution, accounting for more than half the volume of all water pollution and for the most deadly pollutants. Some manufacturing facilities use huge quantities of freshwater to carry away wastes of many kinds. The waste-bearing water, or effluent, is discharged into streams, lakes, or oceans, which in turn disperse the polluting substances. The pollutants include grit, asbestos, phosphates, hot water discharged by factories and power plants causes' so-called thermal pollution by increasing water temperatures. Such increases change the level of oxygen dissolved in a body of water, thereby disrupting the water's ecological balance, killing off some plant and animal species while encouraging the overgrowth of others. Plants have been proven to remove harmful airborne harmful contaminants and increase oxygen level which can lead to increased concentration and productivity levels. So, to reap the benefits, we must learn first how to water these greens. The number one killer of houseplants is over-watering. Poor water quality can also be dangerous. City water is filtered for the safety of humans; however, plants do not agree with many of the chemicals used in that process. Use the cleanest water possible, such as rainwater or reverse osmosis water

Materials and Methods

The samples were collected during the month November 2011 to December2011. Samples for analysis were collected in sterilized bottles (plastic with acid washed).pH –systronic pH meter Type 361.The total hardness of the water samples were determined by complexometric titration with EDTA using eriochrome black-T as an indicator. Sodium and potassium - flame photometer (128) technique. .

Results and Discussion

The pH required for the optimum growth of plant is 5.4 to 7.0 leaf chlorosis, reduced root growth and decay, stunted shoot growth. Poor flower development are seen in plant/crops to high pH .Appearance of these symptoms is due to influence of pH on the solubility of ions such as Iron. Due to reaction with hydroxyl ions at high pH conditions ferrous form (Fe^{2+}) of iron is transformed in ferric form (Fe^{3+}),which is inactive in plant tissues. pH ground water samples were varied from 7.6 to 8.2

Hardness of water is due to presence of calcium ion and magnesium ion .Plants require 150 ppm hardness in water, but samples had hardness range from (92- 150) ppm; which disturb the calcium and magnesium ratio in water which should be 3:5 .If calcium is excess it blocks the ability of Plants to uptake magnesium which cause .Magnesium deficiency ,whose sign are yellowish green patch near the base of the leaf between the midrib and the outer –edge; with acute deficiency leaves may become entirely yellow – bronze and eventually drops and if in hard water magnesium is excess ,it will cause calcium deficiency in plants ,whose sing are young leaves are affected first and become small and disorted or chlorotic with irregular margins. Spotting or necrotic areas, bud development is inhibited blossom end root and internal decay may also occur and root may be developed.

Sodium and potassium are termed, as alkali metals sodium is abundant in water, because of its compound are readily soluble. In ground water it is generally found to be >5mg per liter .Ground water pollution by sodium salt is an unavoidable phenomenon caused form the return flow of irrigation and disposal of industrial and urban wastes. Sodium in water samples were varied from 23.3mg/L to 47.2mg/L **.**

Potassium is involved in maintaining the water status of the plant and the turgor pressure of its cell wall and the opening and closing of the stomata .Potassium is required in the accumulation and translocation of carbohydrates. Plants require 0.26 meq /L Potassium in water samples were varied from 2.1mg/L to 22 mg/L.

Parameter	**pH**	**T.H.**	**Ca^{H}**	**Na^{+}**	**K^{+}**
Point-1	7.6	130	80	28.2	2.8
Point-2	7.7	92	45	32.1	2.4
Point-3	8.1	105	65	43.3	1.9
Point-4	8.0	150	92	47.2	22
Point-5	7.3	98	45	23.3	3.0
Point-6	8.2	145	95	35.7	2.1
Point-7	8.0	121	86	41.3	2.1

All the value are expressed in mg/L except pH, T.H. = Total hardness, Ca^{H} =Calcium Hardness,

Point-1 Makoda Triha,Point-2 Balipura,Point-3 Randhawapuram,Point-4 ,Point-5 Makoda School ,Point-6 Titigari,Point-7 Beragrah school

Conclusion

On the analysis basis it can be concluded that all the tested ground water samples are within permissible limit and ground water are suitable for Irrigation purpose and Plant uses. Reducing the amount of chemical pollution released into the water, soil and air is the easiest way to prevent harm to plants and citizens take steps such as contacting local recycling centers to dispose of toxic chemicals, and using biological methods such as ladybugs, instead of traditional pesticides, to control pests in the yard or garden.

References

1-NRC (National Research Council), Drinking water and public health, vol no1, safe drinking water committee, National Academy press, Washington D.C.(1997)

2-Durum W.H. et al, Occurrence of minor elements in water us geological of minor elements in water, US geological survey circular, 455, 11p, (1961)

3-Chaney R.I. et al, Microelements as related to plant deficiencies and toxicities, Soil. Sci. Soc. Amer.. madison Wisconsin, 233-280, (1997)

4-IS10500, Indian standard drinking water specification bureau of Indian standards, New Dehli, 5, (1991)

5- IIEE-84, Analysis of water quality, Indian Institute of Ecology and Environment, New Delhi.

6- IS10500,Indian standard drinking water specification bureau of Indian standards, New Dehli,5,(1991)

7- Kulshrestha S., Dhindsa S. and Singh R.V., physico-chemical characteristic of underground water and effluent water in sanganer Tow of Jaipur city during Pre-monsoon ,Nat.Envi.poll.Tech.,1(4)453,(2002)

8-APHA(American public health association),American water works association and water pollution control federation, standard methods of examination of waster and waster water ,19th Edition ,New york,U.S.A.,(1995)

9-Pawar C.T. and Joshi M.V., Impact of Urbanization and Industrialization on water Quality, Nat.Environ. Poll. Tech.,1(4),351,(2002)

10-R.Sengupta and T.W. Kurishy, Water pollution Gyanodaya prakashan,Nainital ,165(1989)