



REUSE OF SAGINATED RAIN WATER BY USING PHYTORID TECHNOLOGY

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ABSTRACT:

In growing era and developing surroundings, the use of water deliver performs an essential function and it is needed and utilized in large portions. Excessive environmental problems encompass inadequate control of municipal and waste water and developing sanitation risks to the growing city population, that is hindering the eradication of poverty and the sustainable development of indian society. However now days, the rain water is converted right point into a deliver for diverse purposes in precise aspects with the useful resource of the usage of phytorid technology. Phytorid era is a patented generation and goes a step further through being very powerful in water pollutants remedy. Rain water in a secure way the usage of iris pseudocorus (yellow iris) flora and herbal deliver for treatment with out affecting the surroundings. Chrysopogonzanioides is to growth the ph price and reduce the nitrogen, phosphorous content material. The coagulation and flocculation method is finished through alum to dispose of turbidity and suspended solids. This method is greater notable for least strength, price-powerful with small footprint, negligible operation and upkeep. The primary popularity of the project is to save you water pollutants via analyzing nominal water parameters to keep away from shortage of irrigation water and scent in handled water and to beautify water remarkable which may be reused. Want to meet. Treated water as regards to is 3025 code ebook.

Key terms: phytorid technology, environment, rain water pollutants,chrysopogonzanioides, alum, yellow iris.

INTRODUCTION:

Earth floor consists of 71 percentage of water , it's far vital for all stated sorts of existence. 5% of the water of the planet's crust is discovered in seas and oceans, 1. 7% in groundwater, 1. 7% in the glaciers and ice caps of antarctica and greenland, a smaller fraction in different big water our bodies, 0. 001% inside the form of air vapor, clouds (composed of ice and liquid water suspended inside the air), and precipitation. Simplest 2. 5% of this water is sparkling water, and ninety eight. 8% of that water is in ice (apart from snow in clouds) and groundwater. Less than 0. Three% of all freshwater is in rivers, lakes and the surroundings, and a small quantity (zero. 003%) of earth's freshwater is contained within natural our bodies and artificial products. A large quantity of water is placed inside the interior of the earth. The commonplace every day amount of water fed on with the aid of way of a person in india is ready 150 lpcd. And the water ate up through enterprise is 35 km³/12 months, and agriculture bills for approximately 70% of water consumption. The manufacturing of wastewater from above payments for approximately 85% of the water intake. The primary water source gets polluted to a excellent amount with the aid of the discharge of dangerous materials. It's miles envisioned that every 1m³ of contaminated water once released into water our bodies will similarly contaminate 8 to 10m³ of natural water. In developed international locations, 21 out of 31 diseases are the main purpose of lack of life due to infected water. The above data spotlight the want to find better water treatment to fulfill the problems of meals protection, water availability and inexperienced use of water. There can be no doubt that energy may be the primary challenge of the nations within the coming years. Consequently, suitable era must be identified and observed to address those pressures actually critical.

WHAT IS PHYTORID TECHNOLOGY:

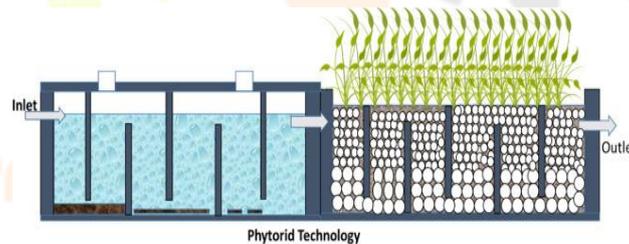
Phytorid is a self-sustainable generation for waste water remedy that works at the principle of herbal wetland. It uses positive specific plant life that may take in nutrients immediately from waste water however do no longer require soil. These vegetation act as nutrient sinker and remover

OBJECTIVE:

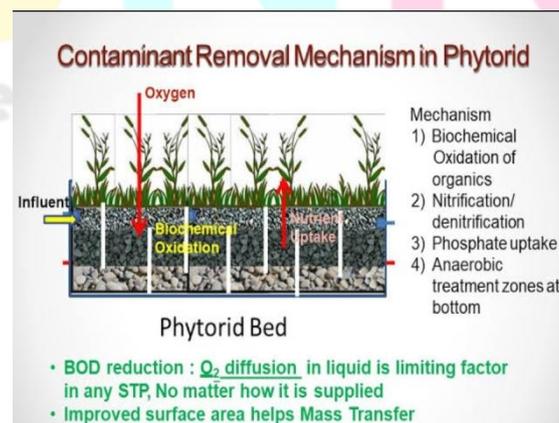
To design low cost phytoreid technology. To develop rain water tainted water to be reused for irrigation purpose. Easy to maintain and does not require skilled manpower

TREATMENT MECHANISM:

Phytorid Technology is a aggregate of physical, chemical and biological approaches that bring about the very last treatment of wastewater. Phytorid Technology System has been located to be effective in treating BOD, TSS, N and P in addition to lowering metals, organic pollution and pathogens. Major pollutant elimination mechanisms in treatment structures include organic tactics such as microbial metabolic pastime and uptake of plant life as well as physico-chemical tactics along with sedimentation, absorption and precipitation at water-sediment, root-sediment and plant-water interfaces. Microbial degradation plays a first-rate role inside the removal of soluble/colloidal biodegradable organic be counted from waste water. Biodegradation happens while decomposed natural rely is transported into a biofilm that is connected to the plant's root system and to the encircling media by the diffusion procedure. This reduces BOD as well as COD. Suspended solids are eliminated with the aid of filtration and gravity settlement. Although plant uptake can be sufficient, the adsorption of phosphorus by anaerobic reducing sediments seems to be the maximum critical technique. Pathogens are mainly removed via sedimentation, filtration and absorption by means of biomass and with the aid of natural loss of life and predation. Evaporation slows water go with the flow and increases contact time, where precipitation, which causes dilution and accelerated glide as the opposite impact. Plants play an crucial function in removing and preserving vitamins and help prevent eutrophication of wetlands. A range of flowers have proven their potential to useful resource in the breakdown of wastewater. Cattail (Typhaspp) are correct examples of marsh species which could take in vitamins correctly. These plant life have a huge biomass both above the surface of the substrate (leaves) and below (underground stem and roots).



PHYTORID BED:



MATERIAL USED:**A. Commonly used plants:**

There are a spread of plants that can be grown in fresh water, grey water, brackish water, wastewater had been taken under consideration for the wetland method which has the exclusive capabilities of reducing and preventing smell and eliminating nutrients from pathogens . Insect breeding etc. Some flowers are indexed below:

B. Coarse Aggregate of 20 mm effective diameter:

It is used for street production as a bottom layer under the floor of the asphalt. Currently this fraction is maximum usually used in the production industry of Ukraine. It is used both for small personal creation and for the development of large business areas. The aggregate of this fraction is used within the production of highways and railways, and as a subsoil in the manufacturing of concrete and large systems from strengthened concrete. It is used as a filler for parking areas and as a base for foundations while building paintings regions for the operation of heavy construction machinery and as a filler for improved electricity concrete goes. Coarse aggregates have been provided as a base layer at a layer of two hundred mm and collected from the university web page.

**C. Fine Aggregate (Fine sand) of 2.36 mm size:**

When mixture is sieved via a four. Seventy five mm sieve, the mixture that passes through it's miles referred to as a excellent combination. Natural sand is typically used within the shape of excellent aggregates, silt and clay also fall below this category. A gentle deposit together with sand, silt and clay is known as loam. The purpose of the great mixture is to fill the gaps in the coarse mixture and act as an performance agent. Fine aggregates had been rendered on the middle layer of 200 mm as the middle layer and amassed from the college website online. Coco-peat soil: Coco-peat is a multi-reason growing medium crafted from coconut husk. The fibrous coconut husk is pre-washed, system dried, sieved and free of sand and different infection together with animal and plant residues. Coco-peat is a superb alternative to standard peat moss and rock wool. Its air-filled porosity and high water maintaining ability make it a perfect developing medium for plant plants. It is 100% organic and green, loose from soil borne pathogens and weeds. It was furnished on the pinnacle layer at 2 hundred mm and was bought from the nursery.



D.IrisPseudacorus:

Iris pseudocorus typically called "yellow flag" or "yellow water iris" is observed in wetlands alongside river banks and close to ponds. It will develop in freshwater or shallow water that may tolerate submersion, low pH and anoxic soils. It has the ability to soak up heavy metals from its roots. Among its capabilities, the rhizome acts as a biofilter to absorb BOD, COD, nitrogen and other natural compounds inside the wastewater. It avoids scent from wastewater and is insect resistant.



METHODOLOGY:

The waste water sample was pre-treated. The aggregates were washed thoroughly with water. Phytorid bed was prepared: Bottom layer: Coarse aggregates (200 mm). Middle layer: fine sand (200 mm) Top layer: coco-peat, soil (100 mm) plants. The sample was collected in a 20 liter bucket and allowed to flow through the pipe under gravity in the Phytorid bed. The sample was collected immediately afterwards. Samples were also taken 24 hours. The collected samples were tested for BOD, COD, TDS, TS, pH, DO.

TYPICAL DESIGN FEATURES:

The phytoreid system is proposed for the treatment of sewage or home wastewater which shall have a basin or a channel with a barrier to save you leakage, but the biofilter tank has a suitable depth of a porous material. A first resource facility will be built with simple for powerful elimination of solids as a result lowering marginal BOD and oil/grease the usage of stone. Porous media additionally supports root emerging plants.



PERFORMANCE OF THE TREATMENT

The performance of the treatment is achieved by analyzing the process's ability to undergo a series of tests in various parameters and change the characteristics of the water according to their response.

Biochemical oxygen demand = 90-95%

Chemical oxygen demand = 85-95%

Total Suspended Solids = 90-95% Total Nitrogen = 60-85%

Phosphate = 50-80%

Turbidity = 80-90% pH = 70-85%

color and smell = white and no smell

ADVANTAGES:

- Cost-powerful
- Operation and upkeep expences are negligible.
- Minimum power requirement
- Smaller footprint (Retention time:Typically much less than 24 hrs.)
- Facilitates recycle and reuse of water.
- No foul odor and no mosquito nuisance.
- Tolerates fluctions in operating conditions along with float, temperature and pH.

DISADVANTAGES:

- Very excessive(or deep) infrastructure; depth can be a trouble in case of excessive groundwater desk requires expert layout and consruction
- Low discount of pathogens
- Effluent,sludge and scum require similarly treatment.

RESULT:

The treatment results in reduction of BOD, COD, total suspended solids, heavy metal component and improvement in pH level and reduction rate of turbidity and hardness which meets the standards of irrigation water requirements and thus required nutrients are required.

CONCLUSION:

Based at the above analysis, it is able to be concluded that the wastewater treatment through Phytoid generation led to considerable discount in BOD, overall solids, COD and improvement in DO content after 24 h. Of treatment time. Treated waste water can be used for gardening, flush tanks, irrigating land, cleaning roads, however it cannot be dumped into herbal water our bodies as it is dangerous to aquatic life. Developing international locations, because of exclusive investment priorities, will not be able to use high-value era on a massive scale for wastewater remedy.

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