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JALOPCHAR™, AN ECO-FRIENDLY WASTEWATER TREATMENT TECHNOLOGY

RECYCLING WASTEWATER FOR AGRICULTURAL USE AND CAPACITY BUILDING: AN ECO-FRIENDLY APPROACH TO WASTEWATER TREATMENT UNDER SWACHHTA ACTION PLAN (SAP)

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PROBLEMS/CONSTRAINTS

Livestock operations in coastal regions having high rainfall and humidity face challenges in managing wastewater, which often contains high levels of nutrients and contaminants. The untreated wastewater from dairy and piggery units contributes to environmental pollution and increases the risk of waterborne diseases. Furthermore, with increasing demands for sustainable farming practices and the need to reduce input costs, especially for water and fertilizers, there is an urgent need for eco-friendly technologies that can effectively treat wastewater, recycle nutrients, and provide safe water for agricultural use. The lack of widespread adoption and proper training in wastewater recycling solutions exacerbates the issue, limiting the potential for sustainable farming in affected regions.

INTERVENTIONS

ICAR-IARI, New Delhi, developed JALOPCHAR™, an eco-friendly wastewater treatment technology, which was established and assessed at ICAR-CCARI under the ICAR's Swachhta Action Plan (SAP) Program. This innovative system treats up to 1,00,000 lakh-liters of wastewater per day, requiring only 1.2 m^2 of land per kilolitre. Refined to suit the high rainfall and humidity of the local ecoregion, the technology was tested on wastewater from dairy and piggery units. Optimal hydraulic retention time was achieved by standardizing inlet and outlet flow rates.

IMPACT

Annually, 70 lakh liters of water recycled waste water is produced which is within permissible limits of the irrigation water for agricultural purposes. A substantial amounts of nitrate (470.4 kg) and phosphate (239.2 kg) were recycled. The treated water irrigates fodder crops, reducing costs for external water and fertilizers. The unit was refined to suit the high rainfall and humidity of the local ecoregion, the technology was tested on wastewater from dairy and piggery units. The system significantly reduced electrical conductivity (16.9%), biological oxygen demand (88.9%), chemical oxygen demand (84.5%), nitrate (69.8%), phosphate (35.3%), chlorides (30.5%), and total coliform count (98.5%), all within permissible irrigation water limits. More than 100 farmers, stakeholders, etc. have been trained and on eco-friendly wastewater treatment using the facility.

Demonstration of the eco-friendly wastewater facility to farmers and stakeholders