COD Decrement, Water Forever

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Water crisis is widely observed specially in the field of agriculture regarding the environmental impacts followed by its neglection, so why not to start the manipulation to find how water can be saved for being reused? Nitrogen fixation explores the reason behind how two processes of (satiating the plants and parameters' concentration diversity) can be operated at the same timeline, generating a loop that regulates the toxicity level of COD and total nitrogen (TN), thus the dissolved oxygen (DO) level is decreased. Firstly, planting bean plant which makes nitrogen fixation by Rhizobia by converting the atmospheric nitrogen into nitrate in the bean roots. Simultaneously, lettuce which is nitrogen needy plant to execute the desired looping after the Rhizobia being activated. Secondly, the irrigating water is drained to be collected, then its parameters were tested. Here, the targeted parameters were measured in the control group and the most changes were detected. Furthermore, measurements of the same parameters were performed in the first trial which was two weeks after Rhizobia activation and after three weeks as the second trial. The experiment showed the whole mechanism of decreasing the TN to be 11.76 mg/L and DO to be 6.67 mg/L after being used up for COD oxidation to be lower concentrated of 98.24 mg/L. The diminution of DO in the drained water enhanced its reuse in the cooling stage of stainless-steel industry and did not lead to metal oxide formation. From here, the range is expanded with our limited domain.

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