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Water scarcity is becoming a serious problem because of urbanization, groundwater extraction, and changing weather patterns. However, rainwater harvesting can help conserve this resource. One overlooked aspect of rainwater harvesting is the first-flush, which is the initial flow of water from rooftops after a period of dry weather. This water contains dust, soil, leaves, bird droppings, and other impurities picked up from the roof surface and can adversely affect the quality of water stored in rainwater harvesting systems if not treated. This study proposes a low-cost First-Flush Rainwater Diverter, which will channel the first-flush water away from the rainwater harvesting system and prevent contaminants from reaching the storage tanks. The proposed diverter aims to offer a simple, cost-effective, and maintainable solution that can be constructed using locally available materials. This study focuses on improving the utilization of harvested water rather than increasing the quantity of harvested water. The study will involve experimental analysis of the characteristics of firstflush runoff and their comparison with those of subsequent runoff from rooftops. Simple observations of water clarity and pH can be made to understand the differences between the two samples, subject to equipment availability. The results will be used to evaluate the performance of the proposed diverter and calculate the diversion volume adequate for the rooftop area. It is expected that this project will not only divert the first-flush water but also show that every drop of water is precious and should be utilized wisely. The proposed diverter will help ensure that the first-flush water, which has a higher concentration of impurities, is diverted away from the storage tanks, thus improving the overall quality of harvested water. The project can have applications in schools, compounds, or residential housing societies to make rainwater harvesting more efficient and sustainable.

