

ABSTRACT

Urban farming activities face several challenges, such as limited space and time. This is due to the shrinking green spaces and the busy schedules of people living in urban areas. Hydroponics becomes an efficient solution for farming amid limited urban land. However, although hydroponics is an efficient solution for farming in limited spaces, the monitoring of water quality parameters such as pH and TDS is still done manually. This causes inaccuracies in nutrient regulation, which can hinder plant growth and reduce yields. For example, uncontrolled water acidity can cause root rot or nutrient toxicity in plants.

Hydroponics is one of the solutions that urban residents can use to overcome land limitations since it can be done indoors. However, maintaining hydroponic plants requires more complex monitoring than regular plants. Hydroponic growers must monitor water acidity and water quality values using measuring instruments. Therefore, a system is needed to make it easier for hydroponic owners to monitor the quality of their hydroponic system.

This smart indoor farming system is designed so that hydroponic owners can perform monitoring from their mobile phones by utilizing visible light communication technology and the Internet of Things. This system is capable of sending data to the Telegram application on the owner's mobile phone by using the light from the hydroponic plant's lamp.

Keywords: *Hydroponics, Water quality, Visible Light Communication (VLC), Internet of Things (IoT)*