

Unveiling the Potential of Hydroponics as a Climate-Smart Technology for Small-Scale Farming and Food Security in Africa

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Abstract : The purpose of the paper was to assess existing literature regarding hydroponics in both the developing and developed countries. Furthermore, relate it to the context of African countries, how they can implement it and benefit from it in the face of climate change, high population growth rates, and reduced food production. Agriculture remains the major economic activity for a number of African countries. It is the source of income for most peasants, and still contributes to the Gross Domestic Product in most of these African countries. Unfortunately, climate change coupled with the increasing rates of population growth; rural-urban migration; and urbanization have led to food insecurity due to a reduction of available land for agriculture. This has further intensified the food security dilemma in Africa, especially in urban areas, where land is already limited. Considering the aforementioned state of affairs, there is an increasing demand for interventions that can help farmers in Africa to cope with climate change and increase food production. This review explores hydroponic farming and how it can be used as a climate-smart farming system in Africa's rural and urban areas. Specifically, the review focuses on hydroponics, requirements for hydroponic farming and the state of hydroponic farming in LDCs and Developed countries (DCs). From the review, it was observed that African countries especially those that receive a lot of sunlight would highly benefit from the solar-powered hydroponic farming systems. Further, still, this farming system will help African countries cope with the challenges of high population pressure in urban areas and climate change as it qualifies to be an urban farming system.

Keywords : Africa, climate-smart agriculture, solar-powered-hydroponics, urban-farming

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