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# Hydroponics – A smart farming and Implementation of Ecommerce website for farmers based on full stack

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**Abstract.** The current global population is expected to reach 9.7 billion by 2050, which will put immense pressure on the food production system to meet the growing demand. However, the traditional farming system alone is not sufficient to meet this demand due to various limitations such as limited land availability, environmental factors, and inefficient use of resources. As a result, there is a real need for adapting new farming systems that can help stimulate plant growth faster and more efficiently. One such technique is Hydroponics, which is a soil-less method of growing plants using mineral nutrient solutions in a water solvent. Hydroponics has been proven to be more efficient than traditional farming systems, as it allows for higher crop yields in less time and with fewer resources. Therefore, creating awareness about this new farming technique and providing farmers with the necessary resources and support to implement it on their farms can help address the food production challenges. In addition to the farming technique, farmers are also facing issues related to intermediaries, who take a cut of their profits, resulting in losses for the farmers. To address this problem, a platform is being created to enable direct interaction between farmers and buyers. By implementing this solution, farmers can increase their income, improve their standard of living, and contribute to the development of a sustainable and efficient food production system.

**Keywords:** Traditional Farming, Hydroponics, supply chain, increased income.

## 1. INTRODUCTION

Hydroponics is a technology wherein plants are grown in a soil-less environment with required nutrient solutions, less water, and zero pesticides. There is 'No Role of the Soil' in a hydroponic system [1]. It is an innovative and efficient farming technique that is gaining popularity around the world, especially in areas where traditional farming methods face limitations such as land availability, environmental factors, and inefficient use of resources. With hydroponics, plants can grow faster and more efficiently, with higher crop yields and fewer resources required. This technique has the potential to revolutionize the agriculture industry by providing a sustainable and efficient way to produce food. Hydroponic products are cleaner, higher quality and free from pesticides.[7] Hydroponics has gained popularity in recent years as an alternative to traditional farming methods. While it is difficult to estimate the exact number of people who have implemented hydroponics, it has been widely adopted in countries such as the United States, the Netherlands, and Japan. The global hydroponics market is expected to grow significantly in the coming years, with a projected market value of \$16 billion by 2025. Hydroponics is needed due to the increasing global population, which is expected to reach 9.7 billion by 2050. This growth will put immense pressure on the food production system to meet the growing demand. By implementing hydroponics, farmers can increase their income, improve their standard of living, and contribute to the development of a sustainable and efficient food production system. Farmers around the world often face the problem of intermediaries taking a significant portion of their profits, resulting in losses for the farmers. This issue is particularly prevalent in areas where there are limited options for buyers, leaving farmers at the mercy of middlemen. To address this problem, a platform is being created that enables direct interaction between farmers and buyers. By cutting out the middlemen, this platform aims to increase the profits of farmers, reduce costs for buyers, and create a more efficient and sustainable supply chain. The platform will provide a direct link between farmers and potential buyers, allowing them to negotiate prices and conduct transactions without the interference of intermediaries. This not only increases the income of farmers but also helps to improve their standard of living. Moreover, the elimination of intermediaries from the supply chain can reduce costs for buyers and increase transparency in the market. The platform has the potential to revolutionize the agriculture industry by creating a more equitable and sustainable system that benefits all stakeholders involved.

## 2. OBJECTIVES

To introduce and create awareness about a new farming technique called Hydroponics, which is being proposed as a solution to meet the current and future demand of food. To address the issue of farmers facing losses due to mediators who take a cut of their profits. This is being done by creating a platform for farmers to interact directly with buyers, thereby cutting out the middlemen and increasing their profits.

## 3. PROPOSED SYSTEM

This paper aims at Farmers who are interested in transitioning to hydroponics farming can receive ideas and knowledge from our website. Our platform offers resources, guides, and information about hydroponics, allowing farmers to learn about this new farming technique and its benefits. We provide a user-friendly interface that enables farmers to upload information about their crops and prices. Buyers can browse and purchase crops directly from the farmers, eliminating the need for intermediaries and allowing for a more efficient and transparent market. In addition to the resources and marketplace, we also offer demonstrations of the practical setup of hydroponics. Our team of experts can provide guidance on how to set up hydroponic systems, maintain them, and troubleshoot common issues. We also offer training and support to ensure that farmers can successfully transition to hydroponics farming. Our website aims to make the transition to hydroponics farming as easy and accessible as possible. By providing knowledge, resources, and support, we hope to encourage more farmers to adopt this sustainable and efficient farming technique. By doing so, we can create a more sustainable and efficient food production system that benefits everyone involved. approach achieves secure smart voting without sacrificing usability. The system is built with a web-based interface to facilitate user interaction. The need to manage voters, voters, and candidates is obvious, so a user- friendly administration interface is designed for easy access.

## 4. SYSTEM ARCHITECTURE

Our System mainly involves three different modules where each one them perform different set of activities i.e admin, farmer, vendor. Here admin perform certain activities where we have provided an interface for him to get logged in to his portal and can view all the users. admin can able to add the crops details that he has received from the farmers. He can also add details regarding subsidies related to farmer, shops and laboratories details. At last, he could able to see the reviews that is given by all the users of this web application.

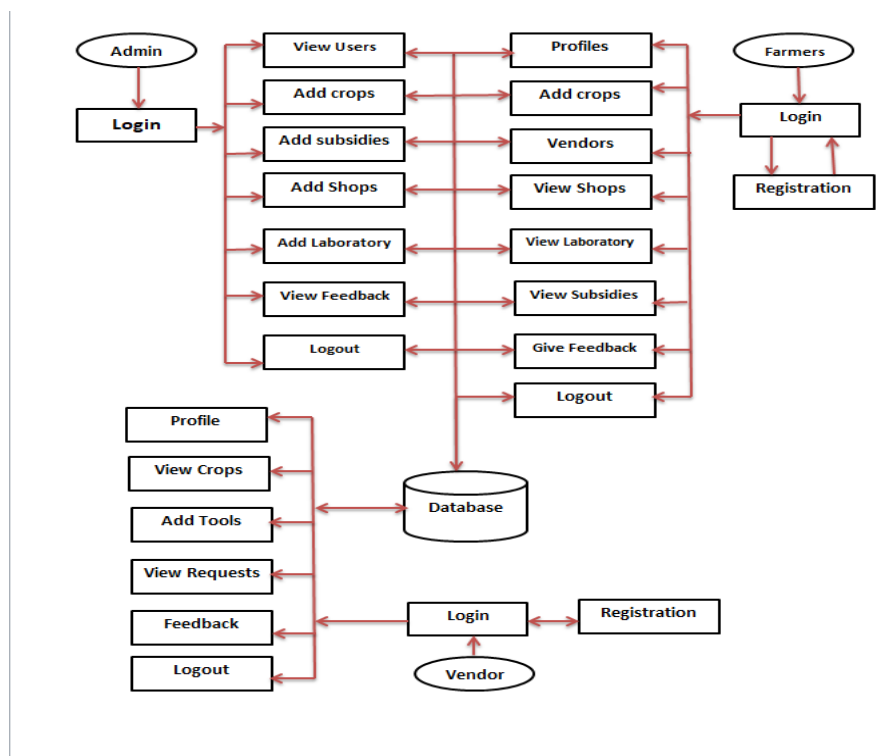


FIGURE 1. Flow diagram

The farmer interface also contains a login page, where they can enter their credentials to get logged into the web page. If the farmer is new to this web application, then he can register by giving his certain details like phone number, email and password. The email can be used for the surname and password will be used to get login for the web application. The farmer initially can view his profile and he can add the crop details that he has got from his yield and he can also buy tools that are added from vendor and view subsidies, shops, laboratories added by admin and get use of it. Then he can give his own feedback regarding the overall user experience about the web application. The third interface that has created for vendor, where for him also a separate portal will be given like farmers and he can also register his account if he is new to this site. After getting logged in the vendor can view his profile details at initial page ,then he can view all the crop details added by admin as well as farmers. If he interested to buy any product there he can easily contact the farmer for further discussion about buying the product and satisfy his needs. The vendor can also add tools that he has related to farming, where farmer can make use of it and he can also view requests given by farmer for the tool. Finally he can feedback about the webpage and his experience. A separate page will be created named About where we can add all the details regarding the hydroponics farming where if any persons who visits the website without any prior knowledge about this smart farming or the person who is interested in trying this new farming technique can have enough amount of knowledge and idea regarding the set up and getting good yield from the hydroponics. This is like an awareness for the users who are interested in growing the crops in urban areas to satisfy their needs.

## 5. EXPECTED RESULT

The creation of a platform that enables direct interaction between farmers and buyers has the potential to transform the agriculture industry in several ways. By cutting out intermediaries, farmers can increase their profits, while buyers can purchase high-quality products at a lower cost. The platform can also create a more sustainable and efficient supply chain by reducing the carbon footprint and transportation costs. The expected results of this project are multi-faceted. First, we anticipate that the platform will help farmers increase their income and improve their standard of living. By connecting directly with buyers, farmers can negotiate fair prices and receive a greater share of the profits. This can create a more stable income for farmers, allowing them to invest in their farms and improve their operations. Second, we expect that the platform will create more transparency in the market. By providing a user-friendly interface that enables farmers to upload information about their crops and prices, buyers can make informed decisions about the products they purchase. This can reduce the risk of fraud and enable farmers to receive fair prices for their products. Third, we anticipate that the platform will promote the adoption of sustainable farming practices. By providing resources and demonstrations on hydroponics farming, we hope to encourage more farmers to adopt this efficient and sustainable farming technique. This can reduce the use of pesticides and fertilizers, conserve water and energy, and create a more environmentally friendly food production system. Fourth, we expect that the platform will contribute to the development of local economies. By promoting direct interaction between farmers and buyers, the platform can create a more localized supply chain. This can create more jobs and opportunities for local businesses, while also reducing the dependence on imported goods. Fifth, we expect that the platform will help to address the issue of food security. By creating a more efficient and sustainable food production system, we can help ensure that people have access to nutritious and affordable food. This can contribute to the overall health and well-being of communities, particularly in areas where there is a high prevalence of food insecurity. In conclusion, the expected results of this project are significant. By creating a platform that enables direct interaction between farmers and buyers, we can create a more equitable and sustainable food production system. This can benefit farmers, buyers, local economies, and the environment, while also promoting food security and improving the overall quality of life for communities.

## REFERENCES

- [1]. Satya Prakash,Rajath Singh,"Role Of Hydroponics towards quality vegetable production:an Overview", *Int.J.Curr.Microbiol.App.Sci* (2020) Special Issue-10: 252-259
- [2]. Shady Mohamed Shawky Abdelmawgoud, Hossam Hosney Abdul Aziz, Ahmed Abdel Ati Shibl and Mufidah Al-Sayed Qabeel , "A Comparitive Economic study of Tomato production by hydroponics and conventional agriculture in green houses: A Case Study in the Nubaria Region", *Asian Journal of Agricultural Extension, Economics & Sociology* 39(2): 126-140, 2021; Article no.AJAEES.66689 ISSN: 2320-7027.
- [3]. Sowmya Ranganathapura Sathyanarayana, Warke Vishal Gangadhar, Mahajan Girish. Badrinath, Raut Manish. Ravindra, Annapure Uday. Shriramrao," Hydroponics: An Intensified Agriculture Practice to Improve Food Production" Sowmya et al. *Reviews in Agricultural Science*, 10: 101–114, 2022 [https://doi.org/10.7831/ras.10.0\\_101](https://doi.org/10.7831/ras.10.0_101).
- [4]. Guilherme Lages Barbosa , Francisca Daiane Almeida Gadelha , Natalya Kublik , Alan Proctor , Lucas Reichelm , Emily Weissinger , Gregory M. Wohlleb and Rolf U. Halden," Comparison of Land, Water, and Energy Requirements of Lettuce Grown Using Hydroponic vs. Conventional Agricultural Methods", *Int. J. Environ. Res. Public Health* 2015, 12, 6879-6891; doi:10.3390/ijerph120606879

- [5]. Aurosikha Swain, Subhrajyoti Chatterjee, M Viswanath, Anindita Roy and Amit Biswas,” Hydroponics in vegetable crops: A review”, *The Pharma Innovation Journal* 2021; 10(6): 629-634.
- [6]. Angga Aditya Permana, Rohmat Taufiq, Salsabila Ramadhina,” Prototype Design of Mobile Application ‘Hydrolite’ for Hydroponics Marketplace”, *Proc. EECSI 2020 - 1-2 October 2020*.
- [7]. <https://kisannetwork.com>.