

## A Survey on Difficulties Faced by Liberian Farmers for Irrigation

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### Abstract

More than 80% of Liberians rely on agriculture as their main source of income. Many households produce a wide range of agricultural goods. Liberia is vulnerable to global food insecurity since it imports 95% of its rice and has a small agriculture sector. The country lacks fundamental facilities like farming equipment, food storage, etc. In Liberia, cassava, rice, and potatoes are frequently used in cooking. Liberians have recently seen a lot of issues with food shortages due to the lack of advanced machinery to manufacture its country's staple commodities. In less than three months, the country has gone through four revolutions because of shortage of rice on its market, which is the most staple food. Due to a lack of modern technology, farmers in Liberia are forced to employ minors to work on their farms, increasing child labor by 75% in less than three months.

According to data gathered in four counties, between 25 and 50 % of minors will be driven into child labor in 2023 because of inadequate technology to manage productivity.

To deal with some of these challenges, Liberia must now apply the Non-Conventional Method of Irrigation. With this method the number of citizens in to farming in the country will increase, and productivity will increase, and there will also be a drop in child labor. If Liberians have access to modern technology, it will enable farmers to manage their crops effectively and boost food production. It will also help to reduce labor force, save time and increase income in less than six months. Additionally, the irrigation system will help farmers understand how technology works and how it helps to ensure the livelihood of all farmers worldwide.

**Keywords:** *Liberian Farming, Irrigation System, Child labor in farming, Lack of infrastructure in crop storage.*

### Introduction

Agriculture has been the mainstay of human life support for a longer time. Currently, more than 80% of Liberia's population relies on agricultural revenue, which sustains many households in the production of cassava, rubber, rice, oil palm, cocoa, or sugarcane. Compared to other crops, rice is produced by most households. However, due to low agricultural production generally, Liberia imports more than 80% of its rice, rendering the nation susceptible to fluctuations in the price of food on a worldwide scale. Lacking essential infrastructures, such as machinery, farming tools, farm-to-market routes, fertilizers and pesticides, and food storage capacity, the sector is poorly integrated. The two main crops for staple foods are cassava and rice. In Liberia

there is only one type of farm which is the flat farm.



Fig. 1: Types of Farms

A developing country with a population of roughly 4.5 million, Liberia. Most of the population consumes rice at least twice daily, making it the main staple diet of the country. However, due to a lack of modern technologies for agricultural management, Liberia no longer grows rice for commercial purposes. Just enough rice is grown by rural farmers to supply their household's food needs. The lack of contemporary technologies in the farming sector is the main issue. The United States Foreign Operations Administration (now USAID) and Liberia started a project in 2008 that was intended to start with a 25-hectare parcel and expand more land as experience accrued. The project was reported as a success, but the irrigation system of rice culture was not maintained. Later, heavy rains washed out the dams and canals, and the area reverted to the original swampland. [1]

But in Liberia, it is clear what a change in rice prices will mean. Most of the rice used is imported, and most of the locally produced rice is used by farmers for their own domestic consumption. Because rice accounts for such a significant portion of the nation's food intake, any increase in the price of rice, whether imported or grown domestically, will undoubtedly result in an increase in poverty. All of this is taking place as a result of the agriculture industry's lack of access to contemporary technologies, such as irrigation systems for managing farms. [2]

Some significant obstacles also contribute to the lack of contemporary technology and its application in the agricultural industry. Liberia must first overcome certain major obstacles before successfully implementing these eco-friendly technologies in the agricultural sector. As a result, the focus of this report is solely on overcoming the barriers to the transfer and diffusion of the three technologies mentioned above for the Liberian agriculture sector. This report uses the Barrier Analysis and Enabling Framework (BA&EF) to assess potential obstacles that might prevent the transfer and diffusion of the three technologies. [3]

The agricultural sector in Liberia has seen a severe decline in output. The labor force has

decreased due to a lack of technology and the ongoing usage of youngsters in agriculture. A kid under the age of 16 may not be employed or hired in Liberia (Section 74) during any period throughout the month when school is in session if the child is required to attend school. [4] Because of un-optimized irrigation practices, most Liberian farmers are only producing what they and their house can eat, which reduces the chances of earning as they are not able to produce more so growth is very limited.

**Insite on Liberian Population and Methods they used for Irrigation**

Table 1: Response from Different County (Region)

County	% of Responses
Lofa	20.8
Bong	15.6
Nimba	15.6
Bomi	16
Grand Capemount	15.1
Grand Bassa	17

There are sixteen counties in Liberia these county was selected because they are the most Agriculture counties. Among these counties, Liberia has the best result in Agriculture and the high child labor because of the activities that are going on. In these counties you have agricultural activities like fishing, farming, and hunting. These activities are often carried on by underage children and older people.

In Liberia there are so many types of farms which are large farms in the range of three to six acre of land, small farms which are in the range of one acre of land, and backyard farms which is also less than one acre of land. The amount of large farms is 16.5% which is less because there are so many issues with the labor force, these farm owners do not employ older people because the cost of labor will be very high. Backyard farms have a large percentage because the owner of those farms is using their children to do the farming work and there is no labor cost. In these cases, you will find a high rate of child labor in this sector of farming.

Table 2: Age Range of Farm owners

Age	% of population from response
18 - 25	15.5
26 – 35	16
36 – 45	18.8
46 – 56	24.9
57 - 67	24.5

Looking at the chat above, older people in the range of 46 to 67 years have more farms. The number of young people between the range of 18 to 36 has their own farm is less because most of the young force are engaged in the mineral sector than the agriculture sector. The chat

shows that older people are investing in farming more than young people. The total amount of percentage showing in the survey suggests that 31.5% Liberia's youthful population is also getting involved in Agriculture.

Table 3: Source of getting water to farms

Sources	% of sources from response
Well	47.4
Creek	23.9
Hand Pump	15
Others	34.70

Liberia as a country has goon through (14) fourteen years of civil war which allow the country to a breakdown in every sector. The survey shows the difficult situations of our farmers. The chat shows that 47% of our farmers in Liberia get water from the well which is very difficult and takes much time and more energy. Take a look at these photos below you will see the used of well.



Fig. 2: Source of water (Well)

Table 4: Equipment used for watering plants

Equipment	% of sources from response
Bucket	38.2
Pan	9.4
Cup	1.9
Water tank	38.2
Other	12.3

The larger population of Liberia farmers do not have any modern form of technology that can be used to water their crops. The chart shows that 38.2% of the Liberian farming population is still using buckets to water their crops and 38.2% also use watering tanks also. The picture below shows the most difficult life of a Liberian farmer.



Fig.3: Equipment used for watering plants (Bucket)

### **Solution**

These are some solutions that can help Liberian farmers:

1. The use of a wind irrigation system, this system will help transport water from wells to the surface of the crops with and without electricity.
2. The use of solar irrigation systems. Solar irrigation will produce water during day time and when there is enough sun.
3. The open channel system. The open channel system will help to collect overflow water from the rainfall. We are recommending the open channel because of climate change. In Liberia when there is a rainy season you have heavy rainfall, and there is no system put in place to control the flow of water, most of the water flow into farm damaging most of the crops.

Water proportioning devices. Proportioning water division structure divides the water in a canal into two or more part that corresponds to the water shares due to each framer or farmer's group served by the branching canals. The proportioning device is usually a wooden block with rectangular notches. The structure is linear and is placed level in the canal perpendicular to the flow of water.

### **Conclusion**

Most Liberian farmers are losing their crops in huge number daily without knowing their main problem. This survey show that Liberian farmers are using more energy and much time on farm work, making them not to do other work when the farm work is over. With these different irrigation methods, our Liberian farmers will have enough of time to do other work and safe their crops and also benefit from their labour.

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