

## Isolation Farming

**Environment-** As global population continues to grow every year so too does the demand for agricultural products. To continue feeding the world without damaging the environment is one of the greatest challenges faced by the society and can only be achieved by increasing the efficiency and sustainability of agricultural production. To achieve this task we need to eliminate all the possibilities that could be a problem prior to dealing with the problem. One of the problem is crop diseases and this project focus on elimination of one of transmission path of crop pathogens which is soil borne diseases. When a soil borne diseases occur, it can travel faster than anyone can notice and the result is catastrophic because the pathogens will affect all trees, crops and every plants nearby. This will lead to disaster for the environment because the health of the environment directly aligned with the well being of plants. Environmental crisis risk includes shortage of water, biodiversity reduction will occur due to the reduction of trees killed by the pathogens because reduction of plants will lead to alteration of the food chain which will affect the biodiversity. The reduction of plants also lead to increasing greenhouse gases bringing damage to the environment.

**Diets-** As the global population continues to grow every year, so too does the demand for agricultural products. For example agricultural land (% of land area) in Ethiopia was reported at 36.26% in 2014, according to the World Bank. In 2014 the population of Ethiopia was reported 97.37 million and in 2019 the population is approximately 112.08 million. As you can see the population is increasing at faster rate than the food supply capacity and imagine if there is an out break of crop killing soil borne diseases or pathogens. This will bring high impact on the economics of the country.

**Economics-** The majority of farmers in Ethiopia are smallholder farms, producing mostly for own consumption and generating only a small marketed surplus. Smallholder farms means low capacity in terms of finance and will likely go bankrupt if there is out break of crop killing soil borne diseases or pathogens. This will affect the country's trade, investment, income level and other essential economic factors.

**Culture-** Food plays big role on the ethics of a society. The more a society is feed, the more it holds its value. Lack of basic necessity like food will make human beings omit their value and results in crisis of peace and order.

**Technology-** The majority of Ethiopian farmers are low tech because low tech is cost wise and labor based. Low tech solution that ensures health of crop is priceless.

**Policy-** After seeing the efficiency of this project government will make law to apply this technology.

One of the main problem faced by agriculture is crop diseases and usually when there is outbreak of crop diseases occur near farming area, the result is devastating. This is because there are many ways the diseases transmits and among them is via under ground soil. Therefore in the future farm lands will be isolated by simple underground isolation mechanism prior to occurring of any problems. This will eliminate the possibility of crop diseases transmission via soil. The isolation will be done by installing protective cover that will not harm the soil and will not be decomposed on 360 degree and may be at the bottom depending up on the depth we install the protective cover. When installing the protective cover the first thing is digging X amount of depth in circular or rectangular edge of the farm land. Then install the protective cover. If the farm land is relatively small and we install the protective cover on low depth we can also install the cover at the bottom too. But this require taking out the farm land soil, install the protective cover and put back the soil again. The importance of this project is known when there is crop crises when a pathogen that travels via soil and kill crop occurs. To talk about the cost we first need to understand well the risk of farm lands when they are facing underground pathogens that will destroy the crops. The risk are catastrophic because forget about the loss of money for the farmers and imagine the after effect of it. Farmers feed the whole country and the world. 1 U.S. farmer feeds 155 people worldwide and if the crop of that farmer is destroyed 155 people have to work on finding their food themselves and this will prevent them from generating income because they will be forced to change work. Also when the 155 people stopped working it has direct impact with the economy of the country. This will bring a crisis in economical, social, political, environmental, cultural and others that will not be compared to the initial investment of

the project. Implementing this technology will solve all these problems generated by the soil transmitting pathogens that kills crop fields.

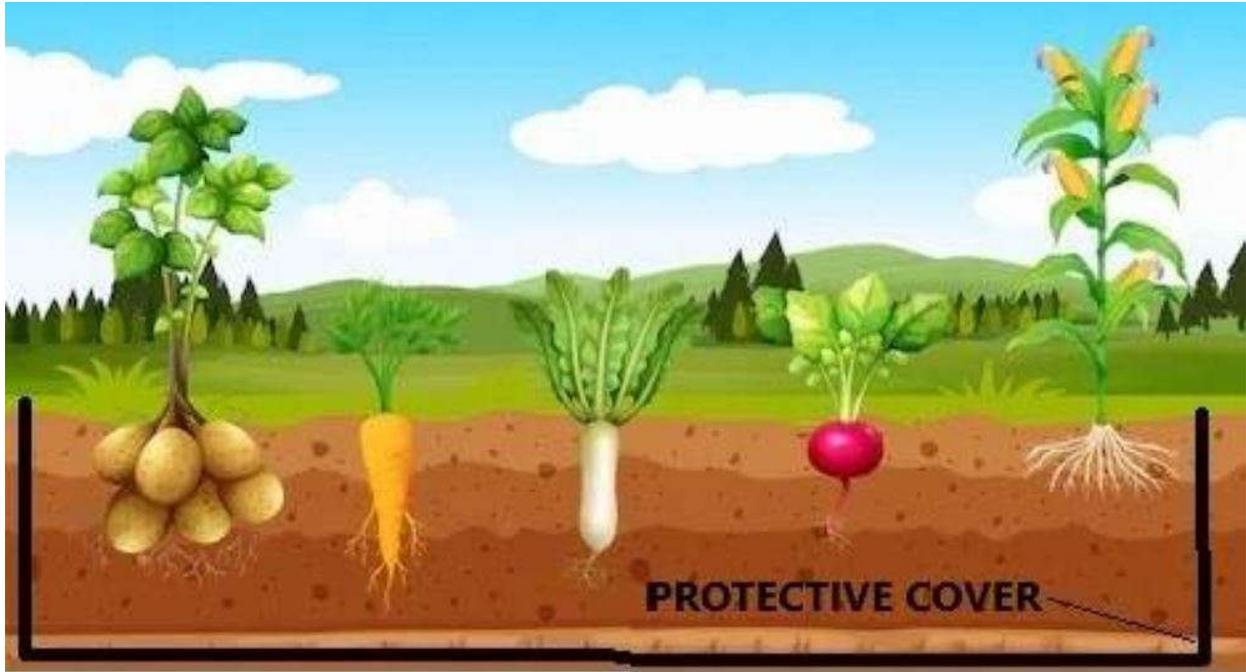
This project also enables water to stay at upper level of near the root of the crops saving water in dry season if the protective cover is installed at the bottom too in addition to the side of the farm land. This will be very critical if lack of water is common in some places saving the crop big time.

Before talking about the effect of post implementation of this project, it is important to have clear and full understanding of the risk farm lands face and how often those risk become reality. This will force us to understand what risk really mean well. Risk is an uncertain event or condition that, if it occurs, has an negative effect. Meaning risk is a possibility of something to occur. In business sense, companies spends fortune to avoid some risk because there are some risk that you just can not recover from if it happens. When dealing with critical issue like food industry, if you do not consider investing in the minimization of risk, it will be more of gambling than justified scientific business. So when we proceed to what will be like for the lives of farmers after this project is implemented, the answer will be simple which is their business will transition from being a gamble to real justified scientific business that gives big peace of mind if soil borne diseases occur. You can not quantify this feeling because it depends on personality of farmers but if you are thinking from logical and scientific approach this has tangible effect as seeing clear data.

I developed this idea when I was working on Saving the 'Ōhi'a – Hawai'i's Sacred Tree Challenge which you can see

via <https://conservationx.com/challenge/invasives/ohia> and my idea was to do an experiment to know the transmission path of the pathogen killing the Ohi'a tree in Hawaii which you can see

via <https://conservationx.com/project/id/302/soiltestexperiment> or <https://conservationx.com/challenge/invasives/ohia/projects>



For more information please visit <https://challenges.openideo.com/challenge/food-system-vision-prize/open-submission/isolation-farming>