



Coffee Innovation Fund – Ethiopia

Supporting innovative and scalable solutions to increase profitability and market access of small-holder coffee farmers

Use of artificial intelligence for early detection of coffee diseases

The average coffee yield in Ethiopia is generally low (about 748 kg/ha). This is partly due to the widespread prevalence of pests, diseases, and coffee weeds. A large-scale infestation or outbreak can severely damage coffee plants and lead to a significant financial loss for producers. In turn, this leads to an additional financial burden for smallholder farmers. Lower productivity means less return on the producer's initial investment, as does a decrease in quality. In addition to this, replanting efforts and the purchase of fertilizers, insecticides, or fungicides all incur extra costs.

Using disease detection technology to take mitigation measures

Debo engineering is dedicated to solving problems using emerging technologies such as Artificial Intelligence, data analysis, image processing, and other related technologies. The project's aim is to detect coffee diseases using Artificial Intelligence. Through this innovation, farmers can take an image of the coffee leaf and an algorithm will recognize if the plant is healthy or has been infected. Furthermore, the platform recommends possible strategies the farmer can take to mitigate and prevent further disease.

Voice assistance feature for those who are unable to read

The first step of this project will collect coffee leaf images from different parts of the country and build a database of healthy and infected plants. After data collection, Debo Engineering will train the artificial intelligence system to enhance disease detection to a 99% accuracy rate. Finally, the artificial intelligence model will be deployed into a mobile App; producers can access the App for \$0.50 as a one-time payment which will be charged upon downloading. Considering the education level of most farmers, the App also has a voice assistance feature for those who cannot read or write – increasing accessibility to reach an even wider range of producers.



Project overview

Term: 2021-2022
Region: Jimma & Yirgacheffe, Oromia & SNNP regions, Ethiopia
Partner: Debo Engineering
Volume: EUR 50,000 (supported by the fund)
EUR 101,000 (total volume)

Goals

- ❖ Reduce coffee production loss and increase chances of profitability.
- ❖ Enhance pest and disease detection accuracy from 96% to 99%.
- ❖ Create a replicable use case for other crops threatened by disease.

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