

# Smart Farming IoT Based Management during Post Covid-19

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**Abstract**— The aim of this project is to construct portable smart farming management tools that could be helpful for the farmer involved in the pineapple industry. The project also aims to focus on the productivity of the plant by varying the fertilizer contents. During the Covid-19 pandemic that impacts all industries especially the agriculture industry, the farmers had an issue related to precision in terms of monitoring the soil condition of their crops due to limitations on the mobility of people across borders and lockdowns are contributing to labor shortages. Therefore, this study expected to look at the possibilities of the Smart Farming Management Tool Internet-of-Things based to be implemented in helping farmers to keep on track of the soil conditions in their crops via smartphones.

**Keywords**—Agriculture Technology, Covid-19, Internet-of-Things, Pineapple Industry, Smart Farming

## I. INTRODUCTION

Covid-19, a new strain of the coronavirus, has posed challenges to all economic sectors, especially agriculture. Due to the pandemic Covid-19, there are challenges faced by all economic sectors including the agriculture sector [1]. In Malaysia, the agriculture sector is heavily dependent on foreign workers. Restrictions on the movement of people especially affect foreign workers and result in labor shortages on the farms. This affects the crops, livestock and fishery sub-sectors, especially the labor-intensive ones, and its impact is felt along the whole agriculture value chain, affecting food availability, and therefore market prices.

Applying smart farming technologies can assist farmers in adopting labor- and in-put-saving practices. Technologies that

link farmers to buyers and logistics services can help minimize the impact of the pandemic on the supply chain. In addition, these technologies will enable us to understand more clearly the impact of the pandemic on agricultural production, labor availability, input supply, and logistics. For instance, applying remote-sensing tools such as IoT based combined with machine learning can help map disruptions in crop production. Data collection using mobile apps and social media can be deployed to monitor how farmers and consumers are affected.

Covid-19 has put a renewed urgency on the general use of automation. Agriculture 4.0 and digitization of the supply chain is the way forward. Precision farming and advanced technologies will allow farms to be more efficient, productive, profitable, safe, and environmentally friendly. In this context, big data analytics, cloud computing, blockchain, and artificial intelligence can be applied to facilitate and manage farm systems as well as supplier relationships and logistics.

The terminologies of agriculture can be represented by the arts and sciences of soil cultivation, crop cultivation, and livestock [2]. At first, Malaysia was a country that was based on agriculture and fisheries. At that time, those sectors contributed to the Malaysian Gross Domestic Product (GDP) by around 55 percent [3-4]. However, in the past few decades, the contribution of the agriculture sector in Malaysia has been declining due to the development of other local industries and services sector [3]. Pineapple has been named as one of the top five fruits which promise high demand in the local and export markets [5].