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*Opinion Article*

# Nutritional deficiencies in plants and stress detection in plant vascular tissue

Suhardi*

Department of Electrical Engineering and Informatics, Bandung Institute of Technology, Bandung, Indonesia

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## INTRODUCTION

Analyze the effectiveness of a platform for a service system based on the Internet of Things (IoT) for tracking nutrient deficits in plants and offering fertilizer advice. This IoT based service system platform was created using a system engineering methodology, and dependability was used to assess its performance. Designed and implemented an IoT based framework for a service system and a chlorophyll meter. The JMeter software's performance of the service system platform. The dependability score derived from the five variables under test (reliability, availability, integrity, maintainability, and safety) this platform can be used as an alternative service to track plant nutrient deficits and offer fertilizing advice to boost yields, cut fertilizer costs, and avoid using too much fertilizer, which can harm the environment. To get the highest yields possible, fertilization is one of the most crucial parts of agriculture. But without accurate knowledge of the nutritional needs of plants, fertilization is frequently done largely on the experience and intuition of farmers. As a result, a tool and platform for a service system are required to offer fertilization recommendations that can help farmers increase yields, cut production costs, and avoid environmental degradation from using too much fertilizer. The amount of chlorophyll can be used to determine nutritional deficits in plants, particularly Nitrogen (N) shortage, as N content is correlated with chlorophyll content. A chlorophyll meter can be used to determine the amount of chlorophyll in leaves. Utilizing a chlorophyll meter to determine the amount of chlorophyll in plant leaves has the benefit of not harming the leaves and requiring little time and effort. By displaying different variations in their electrophysiological data, plants leave evidence of their changing physical states. A healthy diet for plants indicates their importance to growth and a large crop. The information contained in plant signal data is sufficient to identify and assess nutrient insufficiency.

*Corresponding author. Suhardi, E-mail: Hardisu123@itb.ac.id.

## DESCRIPTION

Nutrient deficiency classification using signal decomposition and bi-level measures has not previously been documented. In four time cycles, the proposed work examines tomato plants (early morning, morning, after noon, night) our ability to maintain a healthy diet is largely due to agriculture. Farmers rely heavily on healthy crops. Plant fitness has a significant impact on overall yield. Utilizing cutting edge scientific principles, data intensive techniques, and digital agriculture, agricultural output is increased. Numerous firms all around the world keep an eye on plants constantly to prevent infections and shortages in order to boost productivity. Such monitoring devices offer valuable real time data that can be utilized to spot plant stress and manage the underlying causes. Monitoring systems are used by many companies to detect various environmental indicators. Our ability to maintain a healthy diet is largely due to agriculture. Farmers rely heavily on healthy crops. Plant fitness has a significant impact on overall yield. Utilizing cutting edge scientific principles, data intensive techniques, and digital agriculture, agricultural output is increased. Numerous firms all around the world keep an eye on plants constantly to prevent infections and shortages in order to boost productivity. Such monitoring devices offer valuable real time data that can be utilized to spot plant stress and manage the underlying causes. Monitoring systems are used by many companies to detect various environmental indicators. The high energy intensive resource footprints of next-generation agriculture, including its excessive use of water and fertilizer, must be addressed. Natural polymers found in plants including cellulose, lignin, and pectin have a significant impact on the design of sustainable materials. Therefore, for future growth to occur, healthy plant growth with maximum utilization and production is required, which calls for new technology and sensors for on field precision agriculture. Environmental elements that affect inheritance, such as soil quality, water content, microgravity, radiation, temperature, humidity, and harvesting time, dictate the quality of foods that are produced. Microgravity circumstances have been shown to have a major impact on the nutrient quality of foods in recent biotechnology

advancement. When seeds are used in microgravity environments during germination, the nutrient quality or contents can be changed, improving the quality of food output. The bulk of these conventional and biotechnology techniques work by affecting the epigenome. The creation of proteins in particular cells is regulated by the epigenome, which is the surface of the genes made up of chemical compounds and proteins that can adhere to DNA and direct actions like turning the genes on or off. The fast environmental changes that have led to epigenetic inheritance of a phenotype in many species of plants and animals over the past century have been seen to cause the quick emergence of novel phenotypes in these species.

## CONCLUSION

As a result, it appears that the primary determinants of the nutrient contents of the fruits, leaves, and seeds of the plants ingested as foods are genetic differences and epigenetic modulations in the plant cells. The creation of functional foods may thus benefit from these modulations. Similar to this, feeding the mother or father can change the amount of nutrients in animal feeds, which are being targeted for inclusion in foods under the functional food category.