

Webinar Talk

Precision Management in Soil, Water, and Crop Resources for the Agricultural Industry

Organised By :

Agricultural and Food Engineering Technical Division, AFETD, IEM



Speaker

Assoc. Prof. Ts. Dr.
Aimrun Wayayok

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Date

31st July 2025 (Thursday)



Start At

10.00am - 12.00pm



Venue

virtual Platform - Zoom

REGISTRATION FEES

IEM Students : Free

IEM Members : RM 15

Non-IEM Members : RM70

BEM APPROVED CPD/PDP HOURS : 2

REF NO. : Applying

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Synopsis:

This talk explores the transformative role of precision management technologies in optimizing soil, water, and crop resources within the agricultural industry. By integrating advanced sensors, geospatial analysis, and Internet of Things (IoT) solutions, modern agriculture is moving toward higher productivity, efficiency, and sustainability. The first segment highlights the use of soil sensor-based systems for fertilizer recommendations in rice farming. Real-time soil nutrient data is collected and analyzed to enable site-specific fertilizer applications, ensuring that nutrients are supplied precisely where needed. This approach not only maximizes nutrient use efficiency and crop yields but also reduces input costs and minimizes environmental impacts associated with over-fertilization. Next, the presentation introduces “GanoER,” a handheld device developed for the early detection of Basal Stem Rot (BSR) disease in oil palm plantations. Early and precise detection allows for timely intervention, significantly reducing crop losses and extending the productive lifespan of oil palm trees.

The talk then covers precision irrigation strategies in both oil palm plantations and coconut nurseries. In oil palm estates, the integration of soil moisture sensors and automated irrigation systems ensures water is applied only when and where it is needed, improving water-use efficiency and mitigating the effects of drought. For coconut nurseries, an IoT-enabled irrigation system supports remote monitoring and automated watering, optimizing seedling growth while conserving water and labor.

Finally, the session addresses soil erosion risk assessment in the Cameron Highlands under climate change scenarios. By integrating climate projections with hydrological and erosion models, the research provides valuable insights for sustainable land management and conservation planning in sensitive highland agro-ecosystems. Overall, this talk demonstrates how precision management technologies can drive sustainable intensification in agriculture, balancing productivity, resource conservation, and environmental stewardship.

Speakers Biodata

Assoc. Prof. Ts. Dr. Aimrun Wayayok is an Associate Professor at the Department of Biological and Agricultural Engineering, Faculty of Engineering, Universiti Putra Malaysia (UPM). Specializing in Soil and Water Engineering, Precision Farming Engineering, and Agricultural Water Management, Dr. Aimrun has made significant contributions to both research and practice in these fields. He completed his M.S. and Ph.D. at UPM between 1999 and 2006, focusing on soil and water engineering. Following his doctoral studies, Dr. Aimrun served as a post-doctoral and senior post-doctoral researcher from 2006 to 2011. He was later appointed as a Research Fellow at UPM, where he led research on precision farming of rice. Dr. Aimrun has played key roles in several high-impact projects, including the RM1.2 million “Precision Farming of Rice” initiative and the RM2.3 million “Demonstrator Application of AgriGRID in Community-based Paddy Precision Farming,” both funded by Malaysia’s Ministry of Science, Technology and Innovation. His consultancy work spans projects on variable rate fertilizer application, environmental management in hilly agricultural areas, and renewable energy assessments for national banks. He has also served as a project reviewer for international proposals from the USA, Kazakhstan, and Belgium. Dr. Aimrun has published over 200 scholarly works and supervised 13 PhD and 4 Master’s graduates. With an h-index of 23 (Scopus) and 31 (Google Scholar), and over 3,400 citations, he is recognized as a leading expert in his field, advancing agricultural engineering research and practice in Malaysia and beyond.