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From Field Practices to Functional Compounds: Agronomic Engineering of Horticultural Crops for Sustainable Value Creation

When 2026년 4월 8일(수) pm 1:30

Where 생명과학관 서관 231호

Speaker Dr. Rahmat Budiarto
- Professor, Faculty of Agriculture
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Abstract

Horticultural crop production is increasingly challenged to achieve not only high yield, but also enhanced functional quality and sustainability, amid environmental uncertainty in tropical regions. Our research focuses on engineering horticultural production systems through agronomic interventions, integrating physiological responses with phytochemical outcomes. This work explores how preharvest factors—such as pruning, shading, nutrient management, and exogenous plant growth regulators (e.g., gibberellin, auxin, ethylene, anti-gibberelin, melatonin)—modulate plant growth, morphophysiology, and secondary metabolite accumulation. Particular emphasis is placed on high-value horticultural crops, including citrus, okra, ginger, potato, ornamental leafy plants. In addition, my research incorporates meta-analysis and integrative approaches to synthesize evidence across studies, revealing patterns in how environmental conditions and agronomic strategies influence phytochemical profiles and crop performance. This integrative framework enables the development of precision agronomic strategies that optimize both yield and bioactive compound production. Ultimately, this research aims to bridge the gap between agronomic practices and functional crop value, contributing to sustainable horticulture, improved crop quality, and the development of high-value horticultural products.