

# International Journal of Agricultural and Biological Engineering (IJABE)

Open Access at <https://www.ijabe.org>

## Table of Contents

Volume 17, Number 5, October, 2024

### Overview Articles (OA)

Review of IoT and electronics enabled smart agriculture

..... Narayan Raosaheb Gatkal, Sachin Madhukar Nalawade, Ramesh Kumar Sahni, Girishkumar Balasaheb Bhanage, Avdhoot Ashok Walunj, Pravin Bhaskar Kadam, et al. (1)

Review of the deep learning for food image processing

..... Chenrui Niu, Xiayang Ying, Gan Pei, Menghan Hu, Guangtao Zhai (15)

Review of the interaction mechanism for droplets and foliage under sprinkler irrigation and water-fertilizer integration

..... Bin Hu, Hong Li, Yue Jiang, Pan Tang, Longfei Du (31)

Review of the cutting edge technologies for weed control in field crops

..... Ankita Priyadarshini, Subhaprada Dash, Jagadish Jena, Konathala Kusumavathi, Priyabrata Pattnaik, William Holderbaum (44)

### Applied Science, Engineering and Technology (ASET)

Construction of the particle simulation model for ginger-soil system using discrete element method

..... Wenlong Wang, Pengcheng Zhang, Xin Wang, Xiaojun Meng, Fangyan Wang (58)

Calibrating and testing the discrete element parameters for peanut seedling film

..... Qiangji Peng, Xin He, Guoming Li, Rusha Yang, Xiaoyu Wang, Chunyan Zhang, et al. (65)

Comparison of aerial and ground spraying applications in controlling fusarium crown rot in wheat

..... Nagehan Desen Köycü, Hasan Berk Özyurt, İlker Hüseyin Çelen (73)

Investigation of DRA and non-DRA in locust compound eye on the phototactic response of locust

..... Qihang Liu, Minghao Liu, Bo Yang, Pingchuan Zhang, Jinxin Cui, Huiyuan Zhao (81)

Unmanned aerial vehicle (UAV)-assisted pesticide application for pest and disease prevention and control in rice

..... Sreenath Ragiman, Kiran Babu Talluri, Varma NRG, Vidya Sagar B (88)

### Animal, Plant and Facility Systems (APFS)

LED supplementary strategy based on hourly light integral for improving the yield and quality of greenhouse strawberries

..... Ruimei Yang, Chenhui Qiu, Jianfeng Zheng, Fang Ji, Dongxian He, Po Yang (96)

High-throughput analysis of maize azimuth and spacing from Lidar data

..... Zilong Wang, Yiming Zhang, Liqing Chen, Delin Wu, Yuwei Wang, Lu Liu (105)

Simulation and evaluation of tomato growth by AquaCrop model under different agricultural waste materials

..... Changquan Zhou, Wenju Zhao, Haolin Li, Feng Ma, Keqian Wu (112)

Preparation and properties of rapeseed straw based porous carbon materials

..... Sha Yan, Siyu Hu, Qinyu Yang, Ting Guo, Xinxin Zhao, Meng Wang, et al. (120)

Predictive control for greenhouse temperature and humidity and energy optimization by improved NMPC objective function algorithm

..... Lina Wang, Ying Zhang, Mengjie Xu, Qiuhui Liu, Binrui Wang (128)

### Power and Machinery Systems (PMS)

Distribution properties of airflow in the full envelope type maize stalk chopping chamber

..... Peng Liu, Jin He, Changchang Yu, Shangyi Lou, Chunlei Wang, Mingxu Wang, et al. (137)

- Method for the posture control of bionic mechanical wheel-legged vehicles in hilly and mountainous areas  
 ..... Kaixin Pan, Qing Zhang, Zhenyu Wang, Sibowang, Aobo Zhou, Yong You, et al. (151)
- Design and test of a dual-axis layered rotary tillage stubble exterminator in saline-alkali land based on discrete elements  
 ..... Zhuang Zhao, Dongwei Wang, Shuqi Shang, Peng Guo, Zenghui Gao, Chao Xia, et al. (163)
- Experimental research on affecting factors of the cutting quality of sugarcane harvesters under complicated excitations  
 ..... Hanning Mo, Shaochun Ma, Chen Qiu, Zhimin Huang, Shangping Li (176)

## **Natural Resources and Environmental Systems (NRES)**

- Water-salt transport characteristics of saline soil under hydraulic remediation measures in the Yellow River Delta region of China  
 ..... Kesheng Li, Chuanxiao Liu, Weihang Kong, Yuhan Geng, Wenshuo Xu (193)
- Estimation of the water productivity of different varieties of wheat and rice in the context of agronomic, physiological and nutritional attributes  
 ..... Moneeza Abbas, Sadia Nawaz, Ammara Fatima, Muhammad Kamran, Fakhra Aslam, Saima Atif, et al. (200)

## **Information Technology, Sensors and Control Systems (ITSCS)**

- Online learning method for predicting air environmental information used in agricultural robots  
 ..... Yueting Wang, Minzan Li, Ronghua Ji, Minjuan Wang, Yao Zhang, Lihua Zheng (206)
- Detection of spores using polarization image features and BP neural network  
 ..... Yafei Wang, Ning Yang, Guoxin Ma, Mohamed Farag Taha, Hanping Mao, Xiaodong Zhang, et al. (213)
- Fast and accurate detection of kiwifruits in the natural environment using improved YOLOv4  
 ..... Jinpeng Wang, Lei Xu, Song Mei, Haoruo Hu, Jialiang Zhou, Qing Chen (222)
- Detection and threshold-adaptive segmentation of farmland residual plastic film images based on CBAM-DBNet  
 ..... Lijian Xiong, Can Hu, Xufeng Wang, Hongbiao Wang, Xiuying Tang, Xingwang Wang (231)
- Design and feasibility analysis of a graded harvesting end-effector with the function of soluble solid content estimation  
 ..... Yufei Lin, Hao Liang, Junhua Tong, Haoyu Shen, Xiaping Fu, Chuanyu Wu (239)
- Detection of fusarium head blight using a YOLOv5s-based method improved by attention mechanism  
 ..... Lei Shi, Chengkai Yang, Xiaoyun Sun, Jiayue Sun, Ping Dong, Shufeng Xiong, et al. (247)
- Detection of wheat seedling lines in the complex environment via deep learning  
 ..... Haibo Lin, Yuandong Lu, Rongcheng Ding, Yufeng Xiu, Fazhan Yang (255)
- Identification of soybean in Argentina using Sentinel-2 composite images  
 ..... Linsheng Huang, Yue Chen, Yuhao Pan, Zihang Lou, Shijun Zheng, Xiaoyang Zhang, et al. (266)

## **Agro-product and Food Processing Systems (AFPS)**

- Effects of drying methods on the drying kinetics and quality of maize  
 ..... Pengxiao Chen, Gaoshuai Tian, Mengmeng Jiang, Wenxue Zhu, Jianzhang Wu, Runyang Zhang, et al. (275)

## **Biosystems, Biological and Ecological Engineering (BBEE)**

- Comparative assessment of natural and synthetic reproductive inhibitors in *Oreochromis niloticus*  
 ..... Rafia Jamal, Farkhanda Asad, Shabana Naz, Syed Makhdoom Hussain (284)

## **Perspective and Insight (PI)**

- Ethical and strategic challenges of AI weapons: A call for global action  
 ..... Junwen Bai, Arun S. Mujumdar, Hongwei Xiao (293)

## **Cover Captions**

- Open field vegetable harvester from Facility Agriculture Intelligent Equipment Team at Jiangsu University..... (Cover)
- Welcome to publish with IJABE (JIF 2.2) in Q2 ..... (Back Cover)

## **Information**

- Fourth-term IJABE International Editorial Board..... (Front Insert I)