

American Society of Agricultural and Biological Engineers Annual International Meeting (ASABE 2026)

Indianapolis, Indiana, USA
12 - 15 July 2026

Volume 1 of 2

ISBN: 979-8-3313-3946-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2026) by American Society of Agricultural & Biological Engineers
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact American Society of Agricultural & Biological Engineers
at the address below.

American Society of Agricultural & Biological Engineers
2950 Niles Road
St. Joseph, MI 49085
USA

Phone: (269) 429-0300
Fax: (269) 429-3852

hq@asabe.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

Evaluation of Mechanized Field Operations and Work System Efficiency in German Agri-Photovoltaic Applications.....	1
<i>Heinz Bernhardt, Yassine Louchi, Christina Sebal, Christoph Bader, Johannes Apfelböck, Simon Grebner</i>	
Evaluation of All-Terrain Vehicle Static Stability using Finite Element Analysis and Tilt Table Testing	6
<i>Payam Farhadi, Farzaneh Khorsandi</i>	
Developing a Finite Element Model of ATV Static Stability with Liquid Tank Loads and Sloshing Effects.....	9
<i>Payam Farhadi, Farzaneh Khorsandi</i>	
Bioenergy Recovery from Coffee Waste via Synergistic Electro-Fermentation with <i>Clostridium Species</i>	12
<i>Beenish Saba, Stephen A. Akinola, Thaddeus Ezeji, Katrina Cornish</i>	
Development of an FMCW-Based Six-Band Handheld Active Optical Sensor for Reflectance-Based Spectroscopy.....	26
<i>Albert Benson, Paul Armstrong, Niaoqian Zhang</i>	
Development of a Mobile Manipulator Robot for Autonomous In-Situ Soil Analysis in Chile Pepper Production	59
<i>Roman Langenscheidt, Mahdi H. Jaryani, Heinz Bernhardt</i>	
Tire and Road Wear Particle Risks, Formation, and the Need for Off-Road Analysis: A Literature Review	64
<i>Tovia Owens, R. P. K. Ambrose, Robert M. Stwalley</i>	
PeroHop4.0 - An AI-Based Multi-Stage Spore Detection and Forecasting Framework for Downy Mildew Management in Hop Production	75
<i>Christina M. Sebal, Lina-Liv Willruth, Johann Portner, Johann Hausladen, Florian Haselbeck, Heinz Bernhardt</i>	
Social Media-Enhanced Lifelong Learning Strategies in Agricultural Engineering.....	80
<i>Christina M. Sebal, Maximilian Sedlmair, Linda Ring, Tobias Pachler, Heinz Bernhardt</i>	
Automated Chestnut Grading by Multispectral Vision and Deep Learning	86
<i>Haseeb Amjad, Yuzhen Lu, Yuyuan Tian, Naseeb Singh</i>	
Non-Destructive Quantitative Prediction of Moisture and Oil Content in Ground Coffee Based on FT-NIR Spectroscopy and Explainable AI	103
<i>Runyu Zheng, Mohammed Kamruzzaman</i>	
Real-Time In-Season Variable Rate Corn Fertilizer Application Using Canopy Sensors and UAVs	110
<i>Kalynn R. Meyer</i>	
An Intelligent Diagnosis and Advisory System for Wheat Stripe Rust	118
<i>Yi-Teng Wu, Qi-Yuan Zhang, Hao-Jie Chen, Zhan-Hong Ma, Ce Yang, Wen-Hao Su</i>	

Real-Time Monitoring of Microbial Protein Production using Near-Infrared Spectroscopy and Machine Learning.....	125
<i>Yu-Hang Miao, Jin-Hua Qiao, Mohammed Kamruzzaman, Douglas F. Barbin, Wen-Hao Su</i>	
Long-Sequence Strawberry Bed Reconstruction with VGGT Submaps	132
<i>Ruoyao Qin, Won S. Lee, Zijing Huang, Henry Medeiros</i>	
Development of a Self-Calibrating Mechanism for Pasture Yield Estimation	145
<i>Jasanmol Singh, Ali B. Koc, Matias J. Aguerre, John P. Chastain</i>	
Tracking of Japanese Ayu Fish in a School using Fine-Tuned SORT and OC-SORT Algorithms	154
<i>Alin Khaliduzzaman, Takato Shibayama, Hitoshi Habe, Takayuki Niizato, Hiroaki Kawashima</i>	
Operational Efficiency of Fertilizer Application Systems in Bean Crops (<i>Phaseolus Vulgaris L.</i>).....	160
<i>Aldir C. M. Filho, Carlos E. S. Volpato, Ronald L. Barbosa</i>	
3D Perception Framework for Vision-Guided Robotic Harvesting of Button Mushrooms.....	174
<i>Sadjad Mahnan, Lawrence Arthur, Long He, Shirin Ghatrehsamani, Paul Heinemann, David Beyer</i>	
Analysis of the Oxidative Stability of a Diesel-Biodiesel Fuel Mixture When Different Antioxidants Are Added.....	188
<i>Carolina S. Ribeiro, Ronald L. Barbosa, Carlos E. S. Volpato</i>	
Vision Transformer-Based Fusion of Hyperspectral Reflectance and Fluorescence Imaging for Citrus Leaf Disease Classification.....	197
<i>Zafar Iqbal, Thomas F. Burks, Sriram Thota, Satya A. C. Obellaneni, Quentin Frederick, Jianwei Qin, Moon Kim, Megan Dewdney</i>	
From Image to Pruning Decision: Segmentation and 3D Reconstruction of Cacao Tree Branches on a Mobile Decision Support System (DSS) for Pruning Branch and Points Detection and Recommendation in Cacao Orchards	207
<i>Samuel Azubuine, Magni Hussain</i>	
LeafVision: On-Device Powdery Mildew Detection in Watermelon using a Reconfigurable Edge Platform.....	223
<i>Shekhar S. Borah, Rahul Kumar, Prajwal M. Sethurani, Samvada J. Manel, Chandrasekar Kousik, Prabha Sundaravadivel</i>	
Internal Measurement of Tire Deflection	234
<i>Christopher M. Mauldin, John K. Schueller, Carl D. Crane, Henry Medeiros, Daniel Hofstetter</i>	
Exploiting Phytic Acid-Protein Interactions for Purification of a Rice-Derived Recombinant Protein.....	242
<i>Lisa R. Wilken, Reagan E. Gomez</i>	
One Basin One Water: Integrating Basin-Scale and Onsite Water Systems Across Hemispheres.....	254
<i>Marti Beeston, Anish Jantrania</i>	
Mobile Agrivoltaic Systems for California Agriculture: A Techno-Economic Analysis of Excess Power Utilization.....	257
<i>Amir Kouravand, Mohammadmehdi Maharlooei, Reza Ehsani</i>	
Seasonal and Spatial Assessment of Solar Irrigation Pump Energy Generation, Utilization, and Surplus Potential in Bangladesh	264
<i>Chayan K. Saha, Sabyasachi Niloy, M. Harun Rashid, A. K. M. A. Al-Amin, Anisur Rahman, M. Sanaul Huda, Cham Athwal, Lynsey Melville</i>	

Cost-Effectiveness Analysis of Agricultural Conservation for Water Quality Improvement in Headwater Watersheds.....	271
<i>Evelyn Chen, Chloe Chen, Ashley Crowl, Zhulu Lin</i>	
Development of a Laboratory Scale Seeding Test Platform for Evaluating the Performance of a Vacuum Type Precision Planting Mechanism	279
<i>Juhee Lee, Jinho Son, Wonyeol Choi, Bumseok Park, Hyunggyu Park, Yushin Ha</i>	
A Fundamental Study on Automatic Garlic Cultivar Identification and Mass Prediction Based on Image Processing and Machine Learning.....	282
<i>Wonyeol Choi, Jinho Son, Juhee Lee, Bumseok Park, Hyunggyu Park, Yushin Ha</i>	
FD-DETR: Fruit Stem and Calyx Detection Utilizing Cost-Effective 3D Information from Monocular Depth Estimation.....	284
<i>Kai Guo, Ruokai Guo, Xiuqin Rao</i>	
Design and Performance Evaluation of Lightweight Rollover Protective Structure for Self-Propelled Agricultural Machinery	297
<i>Eyerusalem T. Gereziher, Davide Gattamelata, Pierluigi Rossi, Massimo Cecchini, Mario Fargnoli, Domenico Pessina, Giovanni Carabin, Elisa Cioccolo, Daniele Puri</i>	
Beyond the PTO: From a Low-Profile Battery-Electric Tractor to a Modular Field Energy-Extender Trailer for Ergonomics and Safety.....	305
<i>Elisa Cioccolo, Massimo Cecchini, Mario Fargnoli, Davide Gattamelata, Eyerusalem T. Gereziher, Pierluigi Rossi</i>	
VGG16-Based Vision Framework for Plant Identification and Precision Irrigation in Robotic Horticulture.	314
<i>Jannatul F. Nipa, Michael Beck, Heinz Bernhardt</i>	
Estimating Heat-Stress Mitigation Under Agrivoltaic Shade	319
<i>Minyoung Hong, Farzaneh Khorsandi</i>	
Multi-Species Weed Detection using Supervised (CNN and Transformer-Based) and Semi-Supervised Learning Approaches in Corn Field.....	323
<i>Utsav Bhandari, Saroj Burlakoti, Rhonda Miller, Sierra Young, Eric Westra, Aaron Etienne</i>	
UAV-Based Multispectral Imaging for Discriminating Cover Crops and Weeds at the Species Level	346
<i>Shekhar S. Borah, Prabha Sundaravadivel, Vijay Varanasi, Krishna Reddy, Reginald Fletcher, Prasanna Gowda</i>	
Robot-Enabled Field Phenotyping of Grape Berry Cluster Color using Multimodal Vision Foundation Models for Genetic Mapping.....	359
<i>Yiyuan Lin, Madan Pandey, Lance Cadle-Davidson, Matthew Clark, Soon L. Teh, Yu Jiang</i>	
Privacy-Preserving Communication-Efficient Federated Transfer Learning with Vision-Language Model for Smart Agricultural Image Classification	372
<i>Long Li, Yanbo Huang, Jiajia Li, Dong Chen, Lina Pu, Haibo Yao</i>	
Soil and Wastewater Characteristics in Oil-Polluted Environment of Egbema, Southeast Nigeria.....	386
<i>G. C. Obiechefu, E. C. Ohaji, K. U. Emerson</i>	
An Integrated System Dynamics and TPB Framework for Adaptive Agricultural Reservoir Operation.....	393
<i>Won-Ho Nam, Dong-Hyun Yoon, Jingyu Lyu</i>	

WeedExpert-R1: Incentivizing Domain-Specific Reasoning in MLLMs with Reinforcement Learning for Precision Weed Grounding	402
<i>Zonglin Yang, Wei-Zhen Liang, Nevin Lawrence, Xin Qiao, Chi-En Chiang, Fuchen Li</i>	
Locator Tool for Selective Robotic Harvesting	415
<i>Robert A. Conde, John K. Schueller, Jeremiah J. Blanchard, Joshua I. Arroyo, Alejandro S. F. Martinez, Alessandro Giusti, Matthew J. Miles, Christian S. Veltchey</i>	
Assessing Fuel Flexibility and Syngas Quality in Biomass Gasification	432
<i>Isaias A. Teran, Sourov K. Mondal, Giya Kuriakose, Ikenna Emechete, Gerardo Diaz</i>	
Methodology for Measuring GHG Emissions and Emission Quantities in Japanese Beef Cattle Barns.....	443
<i>Atsuo Ikeguchi, Masakazu Yajima, Masaaki Hoshino</i>	
Game Engine Meets VLM: A Synthetic-Driven Open-Vocabulary Diagnosis Framework for Tomato Disease Monitoring	451
<i>Pengyao Xie, Xingjian Li, Weilong He, Inga Meadows, Lirong Xiang</i>	
IoT-Enabled Monitoring and Control of Onion Storage Parameters for Reducing Post-Harvest Losses.....	478
<i>M. Rostom Ali, Nafis S. Sayem, M. Rahat Miah, Omar M. Seju, Sagor Chowdhury</i>	
Analysis of Transplanting and Early Growth Statistics for Spring Cabbage Under Greenhouse Conditions using AI-Based Image Processing.....	484
<i>M. Nasim Reza, Kyu-Ho Lee, Sun-Ok Chung</i>	
RGB-D Perception for Selective Harvesting of Field-Grown Asparagus with Dual-Path Detection and Point-Cloud-Free Measurement.....	491
<i>Dongyu Liu, Yuzhen Lu</i>	
Alternative Uses of a Hybrid Solar Dryer: Effects of Pre-Treatments on Drying Efficiency and Quality of Dried Fish.....	511
<i>Chayan K. Saha, M. Rayhanul Karim, Taslimun Nahar, Arnab Majumder, Poly Karmoker</i>	
Camera-Based Respiratory Rate Estimation of Naturally Sleeping Pigs.....	518
<i>M. Bashar, Anil Bhujel, Daniel Morris</i>	
Mapping Tomato Cropping Systems in California using AlphaEarth Geospatial Embeddings and Deep Learning Analysis	524
<i>Mohammadreza Narimani, Alireza Pourreza, Parastoo Farajpoor</i>	
Ergonomic Evaluation of Three Electric Walk-Behind Tillers: Physiological Load, Vibration Exposure, and Soil Performance	530
<i>Felix M. Oguche, Jianfeng Zhou, Karen Funkenbusch, Marcia C. Shannon, Noel Aloysius, Teng T. Lim, Aaron Yoder, Timothy Reinbott</i>	
Design and Fabrication of an Ergonomically Optimized Electric Auger Walk-Behind Tiller.....	571
<i>Felix M. Oguche, Jianfeng Zhou, Karen Funkenbusch, Marcia C. Shannon, Noel Aloysius, Teng T. Lim, Aaron Yoder, Timothy Reinbott</i>	
Spatial-Temporal Crop Height Modeling using High Resolution UAS Imagery	588
<i>Kevin Lee, Keith Cherkauer</i>	

HerdSafe CowBot: Autonomous Navigation and Localization Performance in Constrained Dairy Barn Environments.....	602
<i>Felix M. Oguche, Jianfeng Zhou, Karen Funkenbusch, Scott Pooock, Tianqi Yao, Fengkai Tian, Aaron Yoder, Hamza Farah, Supreet Aradhya, Guojie Ruan</i>	
Benchmarking High-Speed and Low-Power AI Models on Low-Cost Edge Devices for Agriculture Applications.....	611
<i>Mohamed A. Salem, Ahmed H. Rabia</i>	
Assessment of the Performance of a Self-Developed Thermal Camera System in Sugarbeet Field	626
<i>Ponien Su, Shuhua Xie, Joseph Oboamah, Xayvian Gonzales, Owen Osmera, Hugo Nunes, Wei-Zhen Liang, Xin Qiao</i>	
Improving Ecosystem Phenology Monitoring in Salt Marsh using Vision Foundation Models.....	640
<i>Puranjit Singh, Himal Acharya, Rodrigo Vargas, Yin Bao</i>	
Smart Greenhouse Rose Monitoring: Bud Stage Recognition and Leaf Area Estimation.....	652
<i>Han-Sheng Chang, Yu-Shan Wang, Wei-Ling Chen, Hsing-Ying Chung, Shih-Fang Chen</i>	
A Vision-Guided Digital Twin for Robotic Harvesting of Greenhouse Lettuce using SAM3D and Isaac Lab	660
<i>Al Bashir, Partho Ghose, Yibin Wang, Prem Raj, Azlan Zahid</i>	
Unsupervised Discovery of Biologically Interpretable Fecal Pathology Phenotypes for Objective Coccidiosis Severity Assessment in Broilers.....	667
<i>Oluwadamilola M. Oso, Hosna Mohammadilabadi, Guoming Li, Lorraine A. Fuller, Samuel E. Aggrey</i>	

VOLUME 2

Lima Bean Yield Prediction using Robotic Multi-View Imaging and Deep Learning	674
<i>Ashish R. Mulaka, Emmalea G. Ernest, Yin Bao</i>	
Measuring Leaf Traits of <i>Phalaenopsis</i> Seedling using Deep Learning.....	688
<i>Yung-Chi Hu, Shu-Jen Lee, Jui-Hsiang Shao, Yan-Fu Kuo</i>	
Lessons from Implementing AI in Flipped Engineering Education for a Fundamentals of Electricity Course.....	695
<i>Bo Liu</i>	
Multi-Class Instance Segmentation of Ornamental Vine Canopies: A Comparative Study of Modern Deep Learning Architectures for Field-Based Phenotyping	707
<i>Saroj Burlakoti, Utsav Bhandari, Aaron Etienne, Bruce Bugbee, Youping Sun, Wei Zhang, Alessandro Ossola, Shital Poudyal</i>	
Auto-Harvest: An End-to-End Automated Cyberinfrastructure for Precision Agriculture Workflows.....	725
<i>Harikesh B. Gopinath, Parth Gupta, Vedant Patil, Christopher Dean, Anirudh Potlapally, Hari Subramoni, Scott Shearer, Ramarao Venkatesh, John Fulton, Christopher Stewart</i>	
Effects of Biomass-Powered Drying Method on the Quality of Cocoa Beans in Ghana: Implications for Postharvest Processing, Sustainability, and Value Addition.....	734
<i>Anuonyam A. Jackson, Paxwell D. Adjei, Anita O. Essel, Joseph O. Akowuah</i>	
From Barn Roof to Village Grid: A Conceptual Design of a Farm-Led Energy Sharing Community	742
<i>Fredrik Regler, Niklas Thomalsky, Thomas Ametsbichler, Heinz Bernhardt</i>	

Gaussian Splatting Based 3D Tomato Fruit Counting and Multi-Stage Classification from Monocular Video	746
<i>Yan-An Chen, Guan-Hua Chen, Ya-Ping Lin, Shih-Fang Chen</i>	
Introduction to OSIRIS - Onboard Soil In-Situ Robot-Assisted Intelligent System.....	753
<i>Jun H. Bae, Jeffery Lancia, Simen Mathison, Richard M. Gozalez, Gilchan Park</i>	
Aspects of Planning an Agricultural Disaster Control System in Rural Areas	763
<i>C. Bader, M. Stadlbauer, J. Stumpenhause, C. Sebald, H. Bernhardt</i>	
HyperBird: A Hyperspectral Microscopic Imaging Robot for High Throughput Plant Phenotyping	767
<i>Jinhong Yu, Aliyah Brewer, Lorenzo Pippi, Saeed Hosseinzadeh, Javier Moreno, Dani Martinez, Chang Chen, Kaitlin Gold, Lance Cadle-Davidson, Yu Jiang</i>	
GrowBot: System Design and Architecture for an AI-Optimized Controlled-Environment Plant Growth Enclosure	785
<i>Roland Kincaid, Shekhar S. Borah, Chandrasekar Kousik, Prabha Sundaravadivel</i>	
Battery Electric Versus Diesel Trucks in Agricultural Logistics: Insights from Real-World Milk Collection Data.....	792
<i>Simon Grebner, Christoph A. Brinkmann, Heinz Bernhardt</i>	
Reliable Fault Detection in Depth Estimation for Robotic Picking Operations	798
<i>Efi Safikou, Yunjun Xu</i>	
Strawberry Plant Leaf Water Content Monitoring in Growing Stages using Sensor Clip	812
<i>Elham Jamshidi, Arash Toudeshki, Reza Ehsani</i>	
Development and Evaluation of a Practical Biosecure Entry System in Animal Farm	819
<i>Rana Das, Teng T. Lim, Corinne Bromfield, Tamara Gull, Solomon W. Odemuyiwa</i>	
Autonomous Field Phenotyping for Rapid Disease Screening using AI and Multi-View Imaging	826
<i>Karishma Kumari, Ali M. Nafchi</i>	
Computer Vision-Based Early Red Rice Detection System Development for Mechanized Row Rice Farming	833
<i>M. Nurul Azmir, Cengiz Koparan, Nilda R. Burgos, Benjamin Runkle, Dongyi Wang</i>	
Parameter Estimation of an Improved Van Genuchten Soil Water Retention Curve Model using Gray Wolf Optimizer	841
<i>Yessica A. Gómez-Pérez, Agustín Ruiz-García, Irineo L. López-Cruz, Miguel Servin-Palestina</i>	
Machine Learning Approaches for Corn Ear Phenotyping with Unwrapped Images.....	851
<i>Mike Tran, Haibo Yao, Chengkai Li, Yanbo Huang, Ebrahiem Babiker, John Brooks, Dong Chen</i>	
Automated 3D Phenotyping of Strawberry Plants: A Fast and Memory-Efficient Deep Learning Approach	865
<i>Partho Ghose, Al Bashir, Yibin Wang, Azlan Zahid</i>	
Aleks 2.0: Enhanced Single Agent MCP System for Autonomous Research in Plant Science	872
<i>Daoyuan Jin, Ruiming Du, Shivranjani Baruah, Adam Bogdanove, Kaitlin M. Gold, Yu Jiang</i>	
Market Potential of Electric Farm Tractors in Germany	885
<i>Julius Wendling, Christoph Brinkmann, Heinz Bernhardt</i>	

A Visual-Proprioceptive Control Framework for Soft Robotic Manipulators in Orchard Operations.....	891
<i>Syed U. B. Sabir, Divyanth L. Girija, Ryan J. Dorosh, Manoj Karkee, Ming Luo</i>	
A Diffusion Model-Based Restoration Framework for Robust Visual Perception in Agricultural Systems.....	908
<i>Linyuan Wang, Haibo Yao, Yanbo Huang, Te-Ming Tseng, Xin Sun, Dong Chen</i>	
Beyond Seasonality: A High-Fidelity Apple Orchard Digital Twin.....	920
<i>Ruiming Du, Yiyuan Lin, Daoyuan Jin, Nicholas Gunner, Yu Jiang</i>	
Concept Development of an Active Hose Management System for Autonomous Irrigation Machines	931
<i>Christoph A. Brinkmann, Heinz Bernhardt, Hubert A. Korte</i>	
Heat-Water Differential Indices: A Curve-Based Weather Representation in Agricultural Systems	939
<i>M. Samiul Basir, Yaguang Zhang, Dennis Buckmaster, Ignacio A. Ciampitti, James Krogmeier</i>	
Beyond Vision: mmWave MIMO Radar for Pest Detection in Challenging Agricultural Environments	955
<i>Prem Raj, Mike Ojo, Partho Ghose, Al Bashir, Bijaya Sapkota, Katerina Graham, Arash Kheirodin, Azlan Zahid</i>	
Hyperspectral Imaging-Based Breath Analysis for Detection of Bovine Coronavirus Infection in Beef Cattle.....	963
<i>Safal Kshetri, Steve Wakham, Hao Gan, Yanqiu Yang</i>	
AI-Driven Nitrogen Management using Crop as Biosensor.....	972
<i>Ahmed Abdalla, Salman Mirzaee, Ali M. Nafchi</i>	
Sensor-Driven Prescription Maps to Enhance NUE and Farm Profit.....	978
<i>Salman Mirzaee, Ali M. Nafchi</i>	
Kalman Filter-Based Sensor Fusion for Site-Specific Mechanical Weeding System.....	982
<i>Shafi M. Istiak, James Y. Kim, Cristhian Perdigon, Sulaymon Eshkabilov</i>	
UAV-Based Yield Prediction and Phenology-Structured Feature Learning in Blackberry	990
<i>Akwasi Tagoe, Cengiz Koparan, Margaret Worthington, Donald Johnson, Dongyi Wang</i>	
Automated Crop Nutrient Deficiency Detection using Computer Vision and Multi-Sensor Data Analytics.....	999
<i>Karishma Kumari, Ali M. Nafchi</i>	
The Impact of Founder Identity and Individual Characteristics on Vertical Farm Performance	1008
<i>Ronald J. Smith, Robert M. Stwalley</i>	
VF-FruitRecon: A Vision Foundation Model-Based Pipeline for Occlusion-Robust Fruit 3D Reconstruction and Size Estimation	1017
<i>Xingjian Li, Pengyao Xie, Weilong He, Nicholas Kaczmer, Neil Mattson, Lirong Xiang</i>	
Advanced AI Framework for Phenotyping of Fusarium Head Blight Disease in Wheat.....	1032
<i>Karishma Kumari, Ali M. Nafchi</i>	
Weakly-Supervised Multi-Object Tracking for Real-Time Blueberry Fruit Mapping.....	1040
<i>Daniel Petti, Changying Li</i>	

AgriDINO-Seg: A DINOv3-Based Foundation Model for Multi-Crop Semantic Segmentation: A Case Study on Blueberry and Peanut	1054
<i>Rui-Feng Wang, Daniel J. Petti, Changying Li</i>	
Spatial and Temporal Effects of Yield Prediction.....	1069
<i>Xiaoyu Zhang, Sunoj Shajahan</i>	
Yield Prediction from a Messy Yield Monitor Data	1080
<i>Xiaoyu Zhang, Sunoj Shajahan</i>	
Reinforcement Learning-Based Forward Prediction of Greenhouse Lettuce Growth with Multimodal Sensing.....	1088
<i>Yibin Wang, Bashir Al, Partho Ghose, Mike Ojo, Azlan Zahid</i>	
Tree-Specific Optimization of Shaking Parameters for Mechanical Harvesting using a YOLO-Based Data-Driven Model.....	1094
<i>Mohsen Farajijalal, Samira Malek, Mohammadmehdi Maharlooei, Joshua H. Viers, Reza Ehsani</i>	
Deployment-Oriented Baseline Evaluation of YOLO26n, YOLOX-S, and RT-DETRv4-S for Broccoli Crown Detection.....	1103
<i>Joon H. Chang, Bo Liu</i>	
Data-Driven Irrigation Scheduling Framework Integrating IoT Sensors and Deep Learning-Based Soil Water Tension Prediction	1115
<i>Deus F. Kandamali, Denis O. Kiobia, Peter C. Ngimbwa, Hasan Mirzakhaninafchi, Ali P. Tavandashiti, Shekhar Thapa, Canicius J. Mwitta, Glen C. Rains</i>	
Spot-Drop Biosensor-Based Spatial Nitrogen Management	1125
<i>Ahmed Abdalla, Ali M. Nafchi</i>	
Economics Study of Variable Rate Technology Adoption and Outreach to Improve Farm Profit.....	1131
<i>Ahmed Abdalla, Ali M. Nafchi</i>	
Cotton Architecture Trait Extraction via 3D Reconstruction and Instance Segmentation	1138
<i>Chenjiao Tan, Lizhi Jiang, Edward S. MacGregor, Matthew Bauer, Peng Chee, Changying Li</i>	
Modeling the Combined Effects of Climate Change and Land Use Dynamics on River Discharge in a Semi-Arid Watershed of Southwestern Iran	1148
<i>Zohreh K. Kouhanestani, Farhad Mokhtari, Farzaneh Khorsandi</i>	
Precision Clusters and Peduncle Cutting Points Detection for Automated Table Grape Harvesting using Deep Learning.....	1152
<i>Auster Zhang, Bo Liu</i>	
Airborne LiDAR-Based Mortality Monitoring of Citrus Tree Decline Under Huanglongbing.....	1165
<i>Wenhao Liu, Yiannis Ampatzidis, Benjamin Wilkinson</i>	
Phenologically Contextualized Deep Learning for Multi-Nutrient Prediction in Grapevine Leaves from In-Field Hyperspectral Imaging	1175
<i>Atif B. Asad, Dawood Ahmed, Nataliya Shcherbatyuk, Pierre Davadant, Manoj Karkee, Markus Keller</i>	
Image-Based Blueberry Yield Prediction by Integrating Object Detection and Vision Foundation Models.....	1190
<i>Puranjit Singh, Jeffrey Neyhart, John H. Price, Sushan Ru, Yin Bao</i>	

Waypoint Generation for Autonomous Navigation of an Agricultural EV Robot	1204
<i>Yuan Zhang, James Y. Kim</i>	
Data-Driven Approach for Estimating Agricultural Activity in Texas.....	1211
<i>Genaro D. Molina, Rodolfo Souza, Madhusudan Venugopal, Robert G. Hardin, Santosh Palmate</i>	
Blind N Management Can Create N-Deficit Zones, Hurt Yield and Profits.....	1223
<i>Salman Mirzaee, Ahmed Abdalla, Ali M. Nafchi</i>	
Non-Destructive Classification of Organic and Conventional Market Eggs using FT-NIR Spectroscopy and Explainable AI.....	1227
<i>Alin Khaliduzzaman, Mohammed Kamruzzaman, Isabella Condotta</i>	
Fluorescence Imaging and Deep Learning for Detection of Low-Contrast Surface Contamination on Eggshell.....	1233
<i>Alin Khaliduzzaman, Tanea Gray, Mamunur Rahman, Naoshi Kondo, Isabella Condotta</i>	
Test-Time Adaptive Latent Feature Restoration for UAV Crop-Weed Segmentation Under Altitude-Induced Resolution Shifts.....	1240
<i>Yu Tian, Xintong Jiang, Nazia Hossain, Asahi Suzuki, Jan F. Adamowski, Shangpeng Sun</i>	
Evaluation of Mask2Former with ConvNeXt V2 Backbones for On-Edge Instance Segmentation in Poultry Images.....	1250
<i>Aashish Poudel, Sudhendu R. Sharma, Jeremiah D. Davis, Joseph L. Purswell, Tami M. Brown-Brandl</i>	
A Fixed Low-Cost NIR-Modified RGB Camera for Spatio-Temporal Relative Monitoring Under Simulated Agrivoltaic Shading.....	1258
<i>Pierluigi Rossi, Giorgia Di Domenico, Massimo Cecchini, Andrea Colantoni</i>	
Predicting Stillbirth Rates in Commercial Pig Herds using Machine Learning: Random Forest, SVR, and XGBoost.	1268
<i>Serena C. T. de Mello Peixoto, Roberto F. da Silva, Júlia D. Marcio, Mamunur Rahman, Isabella C. F. S. Condotta, Marcos A. A. da Silva, Késia O. da Silva Miranda</i>	
Early-Phase Quantification of Farm Machinery Energy Demand: A Case Study on Load Profiling with IoT Devices to Size Hybrid Electric-Hydrogen Systems	1282
<i>Pierluigi Rossi, Giorgia Di Domenico, Massimo Cecchini, Elisa Cioccolo, Eyerusalem T. Gereziher</i>	
Sensor-Based Tractor Rollover Risk Reduction: A Review of Stability Indices and Smart Prevention Systems	1292
<i>Danilo Monarca, Maurizio Cutini, Domenico Pessina, Lavinia E. Galli, Fabrizio Marra, Riccardo Colella, Elisa Cioccolo, Giorgia Di Domenico, Pierluigi Rossi, Eyerusalem T. Gereziher, Leonardo Vita</i>	
Dual-Camera Vision Control and Manipulator Integration for Precision Apple Bud Thinning	1302
<i>Kittiphum Pawikhum, Long He, Paul Heinemann</i>	
Ground Autonomous Agricultural Vehicles: A Review of Technology Trends, Safety Standards, and Australian Codes of Practice	1317
<i>Asif Al Razi Nabil, Justine Baillie, Michael Scobie, Derek Long, Guangnan Chen</i>	
Resource Optimization of Autonomous EV Robot for Thermal Weeding.....	1334
<i>Seungyun Baek, Yuan Zhang, Sulaymon Eshkabilov, Yongjoo Kim, James Y. Kim</i>	

Author Index