

American Society of Agricultural and Biological Engineers Annual International Meeting 2012

**Dallas, Texas, USA
29 July - 1 August 2012**

Volume 1 of 7

ISBN: 978-1-62276-208-8

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© (2012) by the American Society of Agricultural & Biological Engineers
All rights reserved.

Printed by Curran Associates, Inc. (2012)

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

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

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: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Volume 1

Hydrologic Evaluation of Established Rain Gardens in Lincoln, Nebraska	1
<i>Andrew R. Anderson, Thomas G. Franti, David P. Shelton</i>	
Using SWAT to Predict Crop Yields and Salinity Levels Due to Future Weather Scenarios in the North Fork Watershed in Southwest Oklahoma	16
<i>Aaron R. Mittelstet, Daniel E. Storm, Art L. Stoecker</i>	
Cost Analysis of Microalgal Harvesting for Biofuel Production	33
<i>Adam J. Dassey, Chandra S. Theegala</i>	
Design and Development of a Stick Planter for the Developing World	43
<i>Adrian A. Koller, Jorge A. Rascon, Eric Lam, Max Metcalf, Austin Childers, Bill Raun, Randy Taylor, Paul Weckler</i>	
Review of Syngas Contaminants Removal Using Carbon-based Catalysts	51
<i>Pushpak Bhandari, Ajay Kumar, Raymond Huhnke</i>	
Putting the Spray onto the Target – The Development and Demonstration of Vertical Patternators for Fruit Growers	73
<i>Andrew Landers, Paolo Balsari, Emilio Gil</i>	
Using Technology to Serve Agricultural Producers with Energy Audits	84
<i>David Deforge</i>	
Application of Diluted Sulfuric Acid for Manure Ammonia Extraction Using a Gas-Permeable Membrane	95
<i>Amir M. Samani Majd, Saqib Mukhtar, Airton Kunz</i>	
Wastewater Application with Mechanized Irrigation Choosing the Right Materials and Equipment	106
<i>Andrew K. Smith</i>	
Matching Application to the Varying Speed and Geometry of Center Pivot Swing Arm Corner Systems	111
<i>Andrew K. Smith</i>	
Determination of Emission Factors for Steam Flaking of Corn at a Commercial Feedmill	116
<i>Anissa M. Purswell, W. Brock Faulkner, Christopher A. Spencer</i>	
Enzymatic Activity and Ethanol Yield of Sorghum Biomass Used	124
<i>Anne R. Rigdon, Ari M. Jumpponen, Scott A. Staggenborg, Praveen Vadlani, Dirk E. Maier</i>	
Development of a Cross-flow Fish Smoking Kiln Fired by Biomass Material	133
<i>Ajiboye S. Oyerinde, Olawale J. Olukunle, Agboola S. Ogundowo</i>	
Moisture Sorption Isotherm Characteristics of Dehydrated Sorghum Flour (“Ogi”)	149
<i>Ajiboye S. Oyerinde, Ayodeji J. Mustapha</i>	
Sediment and Nutrient Reduction in Irrigation Return Flows by Vegetated Filter Strips on Surface Irrigated Fields	160
<i>Brian W. Bodah, Jeffrey L. Ullman, Rafael Muñoz-Carpena, Gregory A. Kiker, Oscar Perez-Ovilla, William L. Pan, R. Troy Peters, Mark Stannard</i>	
Masters of Energy and Sustainability	170
<i>Brandon C. Harvey, Gregory C. Langley, Wayne C. Martens, Leon G. Schumacher, Samuel J. Orr</i>	
Sudden Failure of a 13-Year Old Manure Storage Embankment	177
<i>Benjamin C. Doerge</i>	
USLE “C” Values for Louisiana Sugarcane	199
<i>Richard L. Bengtson, H. Magdi Selim</i>	
Ultrasonic Cutting of Energy Crops	214
<i>Bo Liu, A. Bulent Koc</i>	
Assessment of Water Concentration in Ethanol and Diesel Fuel Emulsions with Ultrasound	226
<i>Bo Liu, A. Bulent Koc</i>	
Energy Monitoring in Gins - 2011	238
<i>Robert G. Hardin IV, Paul A. Funk</i>	
Seed Cotton Cleaning in Mid-South Gins	248
<i>Robert G. Hardin IV</i>	
The Rapid Production of Biochar	257
<i>Michael D. Boyette, Justin A. Macialek, Brittany P. Alston</i>	
Infiltration Model for Center Pivot Irrigation on Bare Soil	265
<i>Bradley King, David Bjorneberg</i>	
Evaluation of Center Pivot Sprinkler Wind Drift and Evaporation Loss	285
<i>Bradley King, Robert Dungan, David Bjorneberg</i>	
Comparing Soil and Pond Ash Feedlot Pen Surfaces for Environmental Management	297
<i>Bryan L. Woodbury, Roger A. Eigenberg, David B. Parker</i>	
Analyzing Runoff from a Windrow Composting Pad	308
<i>Ernest W. Tollner, Owen J. Duncan, Herbert Ssegane</i>	
Biological Conversion of Cattails for Ethanol Production: Pretreatment Technologies, Economic Analysis, and Environmental Impacts	322
<i>Bo Zhang, Abolghasem Shahbazi, Lijun Wang</i>	
Case Study: Closure of Earthen Lagoon	334
<i>Catherine M. Nash</i>	

Application of Food Grade Compressed Air Standards in a Food Processing Facility	.....	357
<i>Cale Boriack</i>		
A Comparison of Runoff Quality and Quantity from a Urban Commercial Infill Low Impact Development and a Traditional Development	.....	363
<i>Corinne E. Dumonceau, William F. Hunt, Ryan J. Winston</i>		
Nondestructive Measurement of Moisture Content of Different Types of Wheat with a Parallel-Plate Capacitance Sensor	.....	374
<i>V. K. Kandala, N. Puppala</i>		
Effect of Drying Conditions and Level of Condensed Distillers Solubles on Protein Quality of Wheat Distillers Dried Grain with Solubles	.....	382
<i>Maria Rosario P. Mosqueda, Lope G. Tabil</i>		
The Effect of Water Table Management on Water Quality Under Sandy Loam and Clay Loam Soils at the Farm Scale	.....	402
<i>C. S. Tan, H. Y. F. Ng, T. Q. Zhang</i>		
Effects of Compost Addition on Soil Phosphorus and Nitrate-N Losses in Tile Drainage Water under Long-term Conventional Tillage and No-tillage	.....	421
<i>T. Q. Zhang, C. S. Tan, B. L. Ma, H. Y. F. Ng</i>		
The Effect of Microwave Drying Parameters on the Germination of Wheat Seeds	.....	432
<i>Mohamed Hemis, Rupral Choudhary, Dennis G. Watson</i>		
Measurement of Cover Crop Evapotranspiration and Impacts on Water Management in Crop Production Systems	.....	442
<i>Christopher H. Hay, Brett Hankerson, Jeppe H. Kjaersgaard</i>		
Impact of Increased Surface Area Cathodes Using Nanostructures in Microbial Fuel Cells for Electricity Production	.....	451
<i>Alan E. Yost, Ann D. Christy, Lingying Zhao, Olli H. Tuovinen</i>		
Development and Application of Multispectral Algorithms for Defect Apple Inspection	.....	465
<i>Chun-Chieh Yang, Moon S. Kim, Kuanglin Chao</i>		
A Methodology to Reduce Uncertainties in the High-flow Portion of the Rating Curve for Goodwater Creek Watershed	.....	473
<i>Claire Baffaut, E. John Sadler</i>		
Climate and ET: Does Plant Water Requirement Increase During Droughts	.....	482
<i>Charles Swanson, David Smith, Guy Fipps</i>		
Evaluation of ET Based “Smart” Controllers During Droughts	.....	492
<i>Charles Swanson, Guy Fipps</i>		
Evaluation of an On-Farm Two Stage Anaerobic Digester for Biogas/Biomethane Production from Dairy Manure	.....	511
<i>Elizabeth Collins, Jactone Arogo Ogejo, Andrea King</i>		
Food Waste Recycling and Algal Destruction for Municipalities and Food Plants	.....	521
<i>C. L Hansen, Jianming Zhong, J. S. Dustin</i>		
Influence of Media Composition on the Growth Rate of Chlorella Vulgaris and Scenedesmus Acutus Utilized for CO₂ Mitigation	.....	532
<i>Czarena Crofcheck, Michael Monstross, Xinyi E, Aubrey Shea, Mark Crocker, Rodney Andrews</i>		
Runoff Generation from Shallow Water Table Southeastern Forests: Unusual Behavior of Paired Watersheds Following a Major Disturbance	.....	550
<i>Thomas M. Williams, Devendra M. Amatya, Anand D. Jayakaran, Bo Song, Carl C. Trettin, Ken Krauss, Herbert S. Segane</i>		
Combine Fires Events Under Hot Dry Harvest Conditions	.....	566
<i>Nicholas Uilk</i>		
Near Infrared Analysis of Sugar Beet Raw Thick Juice for Ethanol Production	.....	574
<i>Darrin M. Haagenson, Juan M. Vargas-Ramirez, Dennis P. Wieseborn</i>		
Water Balance for a West and a Midwest Watershed	.....	581
<i>David L. Bjorneberg, Kevin W. King</i>		
A Machine for Separation of Corn Stalk Rind and Pith	.....	592
<i>Defu Wang, Dennis R. Buckmaster</i>		
Wireless Load Weight Monitoring Via a Mobile Device Based on Air Suspension Pressure	.....	600
<i>Alexander W. Layton, Andrew Balmos, Derek Hancock, Aaron Ault, James V. Krogmeier, Dennis R. Buckmaster</i>		
Dynamics of Depression Storage during Sprinkler Irrigation and Precipitation Events	.....	616
<i>Michael B. McKinney, Dean E. Eisenhauer, Suat Irmak, John E. Gilley, William L. Kranz, Derrel L. Martin</i>		
Optimization of Human Lysozyme Production by <i>Kluyveromyces lactis</i> K7 in Biofilm Reactor	.....	638
<i>Duygu Ercan, Ali Demirci</i>		
Quantification and Heterogeneity of Infiltration and Transport in Alluvial Floodplains	.....	647
<i>Derek M. Heeren, Garey A. Fox, Daniel E. Storm, Peter Q. Storm, Brian E. Haggard, Todd Halihan, Ronald B. Miller</i>		
Berm Method for Quantification of Infiltration and Leaching at the Plot Scale in High Conductivity Soils	.....	668
<i>Derek M. Heeren, Garey A. Fox, Daniel E. Storm</i>		
Autonomous Robot for Small-Scale NFT Systems	.....	678
<i>Dhruv Agrawal, Guoming Alex Long, Niels Tanke, David Kohanbash, George Kantor</i>		
A Safety Architecture for Autonomous Agricultural Vehicles	.....	686
<i>David Kohanbash, Marcel Bergerman, Karen M. Lewis, Stewart J. Moorehead</i>		
Irrigation Control Methods for Wireless Sensor Network	.....	695
<i>David Kohanbash, Abhinav Valada, George Kantor</i>		
Shear Processing of Wood Chips into Feedstock Particles	.....	703
<i>David N. Lanning, James H. Dooley, Christopher J. Lanning</i>		

Advances in Woody Biomass Drying by Taking Advantage of Surface Properties.....	715
<i>Christopher J. Lanning, James L. Fridley</i>	
Deficit Irrigation Management for Multiple Fields and Years in the Great Plains.....	724
<i>Derrel L. Martin, Christopher L. Thompson, Raymond J. Supalla, Gary W. Hergert</i>	
Water Vapor Adsorption on Torrefied Corn Stover.....	742
<i>Dorde Medic, Matthew Darr, Ajay Shah, Sarah Rahn</i>	
GHG Emissions Analysis of Locally Produced Beef in the Palouse Region of the Northwestern US.....	750
<i>Daniel J. Roop, Dev S. Shrestha</i>	
Characterizing Irrigation Water Requirements for Rice Production from the Arkansas Rice Research Verification Program.....	761
<i>Chris Henry, Earl Vories, Merle Anders, Michele Reba, Charles Wilson, Sarah Hirsh</i>	
Application of Wireless Electroencephalogram (EEG) to Measure Stress in Ducks.....	769
<i>E. M. Pritchett, E. R. Benson, M. P. Caputo, A. L. Johnson, M. E. Persia, H. Xin, R. L. Alphin</i>	
Durability and Illumination Degradation of Alternative Lighting Technologies for Poultry Production.....	784
<i>E. R. Benson, E. Herrman, J. McGurk, D. P. Hougentogler, R. L. Alphin</i>	
Evaluating the Implementation of Ethanol Co-products as Viable Feed Alternative	799
<i>Elizabeth George, Lope G. Tabil, Venkatesh Meda</i>	
Evaluation of Corn Seed Vacuum Metering Systems.....	815
<i>Elizabeth A. Miller, J. Rascon, A. Koller, W. M. Porter, R. K. Taylor, W. R. Raun, R. Kochenower</i>	
Effect of Reaction Scale up on Properties of Epoxidized Canola Oil	826
<i>Ewumbua M. Monono, Darrin Haageson, Dennis Wiesenborn</i>	
Inspection of Fecal Contamination on Strawberries Using Line-Scan LED-Induced Fluorescence Imaging Techniques.....	838
<i>Yung-Kun Chuang, Chun-Chieh Yang, Moon S. Kim, Stephen R. Delwiche, Y. Martin Lo, Suming Chen, Diane E. Chan</i>	
Sugarcane Yields, Sugar and Ethanol Production to Different levels of Vinasse Injected with a Subsurface Drip Irrigation System.....	845
<i>Fabio J. Rocha, Joao A. Lelis Neto, Juan Enciso, Marcos V. Folegatti, Rubens D. Coelho, Jarbas H. De Miranda</i>	
Construction, Start-Up, and Operation of a Plug Flow Anaerobic Digester on the Michigan State University Dairy Farm.....	860
<i>Louis L. Faivor, Dana M. Kirk, David E. Holzwart</i>	
An Automated Tine Control System for Tractor Drawn Citrus Canopy Shakers	879
<i>Farangis Khosro Anjom, Joe Mari Maja, Reza Ehsani, Won Suk Lee</i>	

Volume 2

Uncertainties on Flow Calculated from Stage-discharge Rating Curves in Small Streams	891
<i>François Birgand</i>	
Development of a Noncontact Sensor for Monitoring Milk Coagulation and Cutting Time Prediction in Cheese Making.....	906
<i>Molly Craft-Jenkins, F. A. Payne</i>	
Pretreatment of Corn Stover with Ionic Liquid in Mild Condition.....	922
<i>Feng Xu, Donghai Wang</i>	
Streambank Piping and Internal Erosion as Failure Mechanisms of Streambanks.....	931
<i>Taber L. Midgley, Garey A. Fox, Glenn V. Wilson, Rachel M. Felice</i>	
Predict the Erodibility of Cohesive Soils under the Influence of Seepage	946
<i>Abdul-Sahib T. Al-Madhuchi, Garey A. Fox, Greg J. Hanson, Avdhesh K. Tyagi, Rifat Bulut</i>	
Controlled Laboratory Experiments Investigating the Influence of Shallow Groundwater Tables on Runoff through Vegetative Filter Strips	976
<i>Rebecca Purvis, Garey A. Fox</i>	
Microbial Profiling of Pathogen Concentrations using GIS Mapping	987
<i>Nafisa H. Sirelkhatim, Godfrey Gayle, Stephanie Luster-Teasley</i>	
ARID Raceway Temperature Management	997
<i>George Khawam, Peter Waller, Said Attalah</i>	
Large Square Bale Biomass Transportation Analysis.....	1012
<i>Slobodan Gutesa, Matt Darr, Ajay Shah</i>	
Rapid Evaluation of Physiological Status of Potato Tubers Using Visible/Near-Infrared Spectroscopic Methods	1031
<i>Ahmed Mustafa Rady, Daniel Guyer</i>	
Application of SWAT to a Tile Drained Watershed in East-Central Illinois	1057
<i>Graham W. Kent, Luis F. Rodriguez, Richard A. Cooke, George F. Czapar</i>	
Nondestructive Analysis of Single Plant Canola (<i>Brassica Napus</i>) Seeds Using Near Infra-red Spectroscopy.....	1076
<i>Harjot K. Sidhu, Darrin M. Haagenson, Dennis P. Wiesenborn</i>	
Low Cost Medium for Ethanol Production Using Novel Moderately Alkaliphilic <i>Alkalibaculum bacchi</i> CP15.....	1087
<i>Kan Liu, Hasan K. Atiye, Ralph S. Tanner, Mark R. Wilkins, Raymond L. Huhnke</i>	
A System to Investigate 3-D Droplet Impact on Leaf Surfaces	1099
<i>Xiang Dong, Heping Zhu, Xuejun Yang, Weidong Jia</i>	
Air Velocity Distributions from Air-assisted Five-port Sprayer.....	1110
<i>Jiabing Gu, Heping Zhu, Weinmin Ding</i>	
An Electronic Flow Control System for a Variable-rate Tree Sprayer	1124
<i>Hui Liu, Heping Zhu, Yu Chen, Yue Shen, H. Erdal Ozkan</i>	

Impacts of Reservoir Operation in the SWAT Model Calibration.....	1135
<i>Hakkwan Kim, Prem B. Parajuli</i>	
Phenols and Fuels from Catalytic Microwave Pyrolysis of Lignocellulosic Biomass	1147
<i>Quan Bu, Hanwu Lei, Shoujie Ren, Lu Wang, Yupeng Liu, Jing Liang, Yi Wei, Qin Zhang, Juming Tang, Roger Ruan</i>	
Assessment of Repeated Litter Amendment Application on Ammonia Reduction	1163
<i>Hong Li, Chongyang Lin, Stephen Collier, Susan White-Hansen, Williams Brown</i>	
An On-site Biological Graywater Treatment System Suitable for a Small Business Phase I: Proof-of-Concept.....	1178
<i>James B. Houser, Michael S. Hambourger, Bobbie Jo Swinson</i>	
Structure based Computational Plant Cell Wall Model	1195
<i>Hojae Yi, M. Shafayet Zamil, Virendra M. Puri</i>	
LaTeX for Agricultural Extension Professionals.....	1200
<i>C. Igathinathane, K. Hellevang, L. Backer, M. Liebig, K. Nichols</i>	
Effects of Field Variables on Infield Biomass Bales Aggregation Strategies.....	1224
<i>C. Igathinathane, C. Gustafson, D. Archer, J. Hendrickson, S. Kronberg</i>	
Mechanical Shear and Tensile Characteristics of Selected Biomass Stems	1247
<i>Manlu Yu, C. Igathinathane, C. Gustafson, J. Hendrickson, M. Sanderson</i>	
Estimation of Pecan Yield Using Backscattered Terrestrial Microwave Sensing.....	1259
<i>James A. Hardin, Paul R. Weckler, Carol L. Jones</i>	
Reconstruction of Information for Short-gauged Water Quality Parameters Using a Robust Version of the Line of Organic Correlation Technique	1275
<i>Bahaa Khalil, Jan Adamowski, Shaden Abdel-Gawad</i>	
Patterns of Interannual Temperature Variability in Northwestern Canada	1287
<i>Andreas Prokoph, Jan Adamowski, Kaz Adamowski</i>	
Essential Elements for Producer Participation in Biomass Markets.....	1307
<i>Darren H. Jarboe, Bobby J. Martens, Mohammad M. Hoque, Georjeanne M. Artz</i>	
Impact of Two Course Content Delivery Systems on Student Learning.....	1314
<i>Darren H. Jarboe, D. Raj Raman</i>	
Student Perspectives on a New Biomass Production Module for Fundamentals of Biorenewable Resources	1319
<i>Darren H. Jarboe, D. Raj Raman</i>	
The Hockley Index.....	1325
<i>Jason Griffith, Bill Strelcoff, James Schnaider</i>	
Estimating Ammonia Emissions from a Dairy Using Robotic Diffusive Samplers and Inverse Modeling	1333
<i>Jay M. Ham, Christina Williams, Kira Shonkwiler</i>	
Anaerobic Co-Digestion of Swine Manure and Corn Stover for Biogas Production.....	1342
<i>Jorge Gontupil, M. Darwin, Zhimin Liu, Jay J. Cheng, Honglei Chen</i>	
Proximate and Ultimate Compositional Changes in Corn Stover during Torrefaction using Thermogravimetric Analyzer and Microwaves	1348
<i>Jaya Shankar Tumuluru, Timothy Kremer, Christopher T. Wright, Richard D. Boardman</i>	
Impacts of Climate Variability on Soybean and Corn Yields in Mississippi Delta.....	1366
<i>Priyantha Jayakody, Prem B. Parajuli, Gretchen Sasenrath</i>	
Irrigation Interval Effects on Cotton Production Using Subsurface Drip Systems.....	1375
<i>James P. Bordovsky, Cora Lea W. Emerson, Joe T. Mustian</i>	
Co-gasification of Coal and Hardwood Pellets: Syngas Composition, Carbon Efficiency and Energy Efficiency	1385
<i>Jagpinder Singh Brar, Kaushlendra Singh, John Zondlo, Jingxin Wang</i>	
Effects of Torrefaction on Particle Size Distribution of Corn Stover.....	1389
<i>Jeremy Brue, Matt Darr, Dorde Medic</i>	
Effect of Dilute Alkali Pretreatment on Sugar Release from Transgenic Switchgrass	1401
<i>Ziyu Wang, Jiele Xu, Pankaj Pandey, Jay J. Cheng, Ruyu Li, Rongda Qu</i>	
Beneficiation of Chipped and Shredded Woody Biomass.....	1412
<i>James H. Dooley, David N. Lanning, Christopher J. Lanning</i>	
Low-energy Commution of Woody Biomass to Create Precision Feedstock Particles	1423
<i>David N. Lanning, James H. Dooley, Christopher J. Lanning</i>	
Energy Efficiency Data Comparison of Ten Wisconsin Grain Dryer Installations	1433
<i>Jennifer L. Brinker, Nick Anderley</i>	
Comparison of Water and Energy Management Strategies on Two Wisconsin Dairy Farms	1446
<i>Jennifer Brinker, Bethany Reinholtz, Christopher Beedle</i>	
Enhancing Access to Greenhouse Facilities in Compliance with ADA Guidelines	1453
<i>Lisa M. Johnson, S. Dee Jepsen</i>	
Assessment of Agricultural Safety and Health Curriculum Available to Post Secondary Students.....	1460
<i>Jeffery Suchy, S. Dee Jepsen</i>	
Dynamic Response of Sweet Cherry Tree to the Vibration of a Limb Shaker	1468
<i>Jianfeng Zhou, Long He, Xiaoqiang Du, Du Chen, Qin Zhang, Manoj Karkee</i>	
Evaluating Internal Maturity of Tomatoes using Spatially Offset Raman Spectroscopy	1481
<i>Jianwei Qin, Kuanglin Chao, Moon S. Kim</i>	
Greenhouse Dehumidification Requirement in Cold Regions.....	1497
<i>Jingjing Han, Huiqing Guo, Robert Brad, Doug Waterer, Zhu Gao, Rick Vanduyvendyke</i>	
Canopy Architecture Affects Light Interception in Sweet Cherry Your	1511
<i>Jingjin Zhang, Rui long Luo, Patrick Scharf, Matthew Whiting, Qin Zhang</i>	
Decision Process for the Application of Variable Rate Irrigation	1522
<i>Jacob Larue, Cole Fredrick</i>	

A Computational Fluid Dynamics Model of Algal Growth in Open Raceways	1531
<i>Jessica L. Drewry, Yifan Liang, Christopher Y. Choi</i>	
Occurrence and Movement of Antibiotic Resistant Bacteria, in Tile-Drained Agricultural Fields Receiving Swine Manure.....	1541
<i>Jason L. Garder, Michelle L. Soupir, Thomas B. Moorman</i>	
Evaluation and Modeling of PM₁₀ Emissions from Laying Hen Operations.....	1550
<i>Jnana Bairy, Calvin B. Parnell Jr., Russell O. McGee, Lingjuan Wang-Li</i>	
Optimization of a Cottonseed Dehulling Process to Yield Intact Seed Meats	1566
<i>Jacob L. Nunneley, William B. Faulkner, Matthew V. Shimek, Greg A. Holt, Tom C. Wedegaertner</i>	
Nutrient Concentrations of Runoff as Affected by the Diameter of Unconsolidated Materials from Feedlot Surfaces.....	1582
<i>John E. Gilley, Gregory D. Boone, David B. Marx</i>	
Hydraulic Characteristics of Unconsolidated Surface Materials Located Within Feedlots	1594
<i>John E. Gilley, Gregory D. Boone</i>	
Remotely Sensed Estimates of Crop Residue Cover for Standing and Flat Wheat Stubble.....	1610
<i>Jonathan Aguilar, Robert Evans, Merle Vigil, Craig S. T. Daughtry</i>	
Corn Sensor Development for By-Plant Management	1619
<i>Jorge A. Rascon, Randal K. Taylor, William R. Raun, Wesley Porter</i>	
Evaluating Remote Sensing-based Crop Water Use Monitoring Methods Using Soil Moisture Sensors	1632
<i>José L. Chávez, Saleh Taghvaeian, Thomas J. Trout</i>	
Assessment of SWAT Model Uncertainty of Soil Parameters for Agricultural Dominated Systems under Data-Poor Conditions.....	1644
<i>Javier M. Osorio Leyton, Mary Leigh Wolfe, Conrad D. Heatwole, Christopher W. Zobel, Darrell J. Bosch</i>	
DECISIONS Model: A GIS-based Tool for Watershed Nutrient Planning.....	1659
<i>Javier M. Osorio Leyton, Mary Leigh Wolfe, Christopher W. Zobel, James W. Pease, Darrell J. Bosch</i>	
A Coarse Techno-Economic Model of a Combined Fermentation-Catalysis Route to Sorbic Acid	1671
<i>Joshua Claypool, D. Raj Raman</i>	
Scale-up of Liquid Hydrocarbon Production using Gasified Biomass	1691
<i>Jason Street, Fei Yu, Eugene Columbus, James Wooten</i>	
Improving the Storage Life of Raw Beet Juice for Ethanol Production	1705
<i>Juan M. Vargas-Ramirez, Darrin M. Haagenson, Scott W. Pryor, Dennis P. Wieseborn</i>	
Effects of Grain Bag Internal Environment on Commercial Corn and Soybeans.....	1715
<i>J. K. Ward, J. D. Davis</i>	
Biological Nitrogen Removal in Biofilters Enhancing Nitritation-Anammox Process: Considerations of Design Parameters	1731
<i>Jianfeng Wen, Wendong Tao</i>	
Innovative Systems for Weed Control in Small Scale Organic Production.....	1740
<i>John Wilhoit, Tim Stombaugh, William Pomeroy, Mark Williams</i>	
Monitoring of Fine Particulates Downwind of Broiler Houses – A Field Study	1753
<i>John W. Worley, Michael Czarick, Brian D. Fairchild, Casey W. Ritz, Luke P. Naeher</i>	
Preparation and Characterization of Homogeneous Poly(lactic Acid)-cellulose Nanowhiskers Composite.....	1763
<i>Jin Gu, Jeffrey M. Catchmark</i>	
Pretreatment of Lignocellulosic Biomass with Recycled Black Liquor for Sugar Production	1769
<i>Jie Xu, Ximing Zhang, Pankaj Pandey, Jay J. Cheng</i>	
Effect of Particle Size of Foam Mat Dried Tomato Juice Powder on Various Physical and Sensory Attributes	1775
<i>Dattatreya M. Kadam, Monika Sharma, Sonia Chadha, Robin A. Wilson</i>	
Pyrolysis of Distillers Grains	1788
<i>Christine Wood, Kasiviswanathan Muthukumarappan, Kurt A. Rosentrater</i>	

Volume 3

Techno-Economic Modeling of a Corn Based Ethanol Plant in 2011	1812
<i>Christine Wood, Pierre Aubert, Kurt A. Rosentrater, Kasiviswanathan Muthukumarappan</i>	
Twin-screw Extrusion Processing of Vegetable-Based Protein Feeds for Yellow Perch (<i>Perca flavescens</i>) Containing Distillers Dried Grains (DDG), Soy Protein Concentrate (SPC), and Fermented High Protein Soybean Meal (FSBM).....	1847
<i>Parisa Fallahi, Kasiviswanathan Muthukumarappan, Kurt A. Rosentrater</i>	
Twin-screw Extrusion Processing of Vegetable-Based Rainbow Trout (<i>Oncorhynchus mykiss</i>) Feeds Using Graded Levels of High Protein Fermented Soybean Meal (FSBM).....	1877
<i>Parisa Fallahi, Kasiviswanathan Muthukumarappan, Kurt A. Rosentrater</i>	
Twin-screw Extrusion Processing of Vegetable-Based Yellow Perch (<i>Perca flavescens</i>) Diets Containing Fermented High Protein Soybean Meal and Graded Levels of Distillers Dried Grains with Solubles	1919
<i>Parisa Fallahi, Kurt A. Rosentrater, Kasiviswanathan Muthukumarappan</i>	
Twin-screw Extrusion Processing of Rainbow Trout (<i>Oncorhynchus mykiss</i>) Feeds using Graded Levels of High Protein Corn-based Distillers Dried Grains (HP-DDG) and Conventional Distillers Dried Grains with Solubles (DDGS).....	1973
<i>Parisa Fallahi, Kurt A. Rosentrater, Kasiviswanathan Muthukumarappan</i>	
Economics and Logistics of Blending Condensed Distillers Solubles with Stover on Small to Mid-Size Cattle Farms	2032
<i>Katharine H. Bartlett, Dennis R. Buckmaster, Nicole J. Olynk, Shawn S. Donkin</i>	

Poultry Litter and Switchgrass Blending and Pelletizing Characteristics for Biochar Production	2047
Keri B. Cantrell, Jerry H. Martin II	
The Decommissioning of Cottonwood Creek, Site 15	2060
Kevin R. Cook, Heath A. Sand, Robert W. Tooie	
Alternative Cooling of Dairy Cows by Udder Wetting	2073
K. G. Gebremedhin, C. N. Lee, J. E. Larson, J. Davis	
Sustainable Growth of Miscanthus on Marginal Lands Amended with Flue Gas Desulfurization Gypsum and Sewage Biosolids	2093
Lindsay A. Kilpatrick	
Development of a Yield Monitor for Peanut Research Plots	2131
K. R. Kirk, W. M. Porter, W. S. Monfort, Y. J. Han, W. G. Henderson Jr., J. Thomas	
Comparing Semi-continuous Air Sampling Versus 24-hour Bag Samples from Two Flat-bed Biofilters with New Woodchip Media	2141
K. A. Janni, L. D. Jacobson, B. P. Hatchler, J. P. Oliver, L. J. Johnston	
Single-pass Baling of Corn Stover	2161
Joseph R. Keene, Kevin J. Shinners, Leonard J. Hill, Adam J. Stallcop, Scott J. Wemhoff, H. Dennis Anstey, Aaron J. Bruns, Jeremiah K. Johnson	
Characterization of a Novel Cold Atmospheric Air Plasma System for Treatment of Packaged Liquid Food Products	2183
N. N. Misra, Dana Ziužina, P. J. Cullen, Kevin M. Keener	
Densification of Radio Frequency Pretreated Lignocellulosic Biomass Barley Straw	2197
Kingsley L. Iroba, Lope G. Tabil	
On-Farm Water Storage Systems in Porter Bayou Watershed, Mississippi	2207
Richard L. Kirmeyer III, Joel O. Paz, Mary Love M. Tagert, Jonathan W. Pote, Elizabeth K. McCraven	
Teaching Tractor Roll-over Stability Using Lego Mindstorms	2220
A. Bulent Koc, Bo Liu, Gregory C. Langley	
Development of a Customized Gas Sensor Array for Post Harvest Disease Detection in Onions During Storage	2230
Tharun Kumar Konduro, Changying Li, Glen Rains	
Single-pass Baling Productivity and Grain Logistics Analysis	2241
Keith Webster, Matthew J. Darr, Kevin S. Peyton	
Inverse-dispersion Technique for Assessing Lagoon Gas Emissions	2254
Kyoung S. Ro, Melvin H. Johnson, Kenneth C. Stone, Patrick G. Hunt, Thomas Flesch, Richard W. Todd	
A Study on the Impact of Wood Species on Grinding Performance	2262
Ladan J. Naimi, Shahab Sokhansanji, Xiaotao Bi, C. Jim Lim, Staffan Melin	
Cleaning and Chemical Treatment of Flax Fibre for Development of Biocomposite	2272
Satyanarayan Panigrahi, Radhey Lal Kushwaha, Lope G. Tabil, Sujata Panigrahi	
Impact of Fibre Diameter on Mechanical Properties of Flax Based Composite	2286
Satyanarayan Panigrahi, Radhey Lal Kushwaha, Anisur Rahman	
Tidal-flow Constructed Wetlands (TFW), for Treating and Reusing High Strength Animal Production Wastewater	2296
Leslie L. Behrends, Joseph Chopereno	
Assessment of Internal Quality of Blueberry Using Hyperspectral Imaging	2333
Gabriel A. Leiva-Valenzuela, Renfu Lu, José Miguel Aguilera	
Effect of Anaerobic Digestion on Volatile Fatty Acids in Dairy Manure	2348
Laura Page, Ji-Qin Ni, Albert J. Heber, Nathan S. Mosier, Xingya Liu, Hung-Soo Joo, Pius M. Ndegwa, Joe H. Harrison	
Fast Pyrolysis of Corn Stover and Sawdust in a Novel Reactor	2364
Wangda Qu, Lin Wei, Zhongyi Ma, James Julson	
Global Food Security and Sustainability through Agricultural Education and Training	2379
L. Sivanandan, J. Jaczynski, K. Singh, W. Burnett, G. Lies, H. Niwas Mishra, K. Matak, M. Ronaghi	
Shaking Energy Delivery on Sweet Cherry Trees in Different Excitation Modes	2383
Long He, Jianfeng Zhou, Xiaoqiang Du, Du Chen, Qin Zhang, Manoj Karkee	
Calibration Drift Assessment and Upgrades to the Fan Assessment Numeration System (FANS)	2395
Michael P. Sama, Gabriela M. Morello, Laura Pepple, Igor M. Lopes, George B. Day V, John Ernest, Douglas G. Overhults, Richard S. Gates, Kenneth D. Casey	
Assessing the Development of Ecosystem Services in Constructed Stormwater Wetlands	2408
Laura S. Merriman, William F. Hunt	
Assessing the Fraction of the Temporary Storage Volume Occupied by Emergent Vegetation in Constructed Stormwater Wetlands	2415
Laura S. Merriman, Corinne E. Dumonceau, William F. Hunt, Ryan J. Winston	
Analysis of Gluconacetobacter Xylinus Xopolysaccharides and Its Impacts on Bacterial Cellulose Production and Crystallization	2425
Lin Fang, Jeffrey M. Catchmark	
Crop Water Stress Index and Non-Stressed Baseline of Corn Grown in the State of Wyoming, US	2434
Marcelo Aguiar Abritta, Axel Garcia Y Garcia	
Improved Method of Producing Furfural from Biomass	2444
Anurag Mandalika, Troy Runge	
Irrigation Management to Improve Corn Water Use Efficiency Using Mulch and Alternate Emitter Positioning	2457
Mostafa Gouyandeh, Masoud Parsinejad, Masoumeh Shokrollahi	
Ammonia Removal Using Nitrification and Anammox in a Single Reactor	2466
Matias Vanotti, José Martinez, Takao Fujii, Ariel Szögi, Daisuke Hira	

Advances in Dust Cyclone Research	2817
<i>Paul A. Funk, Derek P. Whitelock</i>	
Monitoring Agricultural Processing Electrical Energy Use and Efficiency	2835
<i>Paul A. Funk, Robert G. Hardin IV</i>	
Pretreatment of Wheat Straw Using the Combination of Sodium Hydroxide and Lime for the Production of Fermentable Sugars	2844
<i>Pankaj Pandey, Jiele Xu, Ximing Zhang, Lalitendu Das, Jay J. Cheng</i>	
Soil and Variety Effects on Energy Use and Carbon Emissions Associated with Switchgrass-Based Ethanol Production in Mississippi	2853
<i>Prem Woli, Joel O. Paz, Brian S. Baldwin, David J. Lang, James R. Kiniry</i>	
Predicting Water Quantity and Quality Based on Estimated Development Within the Reedy River Watershed	2875
<i>Charles V. Privette III, John C. Hayes, Stephen Taylor</i>	
Energy Evaluation in the High Velocity Algae Raceway Integrated Design (ARID-HV)	2887
<i>Said Attalah, Peter Waller, George Khawam, Randy Ryan</i>	
End-effector Performance Evaluation of a Hand-held Mechanical Bloom Thinning Device	2902
<i>Meng Wang, Qin Zhang, Karen Lewis</i>	
Characterization of Physical and Aerodynamic Properties of Walnuts	2914
<i>Ragab Khir, Zhongli Pan, Griffiths G. Atungulu, James F. Thompson</i>	
Design of a System to Monitor Youth Workers' Heat Stress and Positioning Using Non-Invasive Techniques	2934
<i>Matthew K. Kandel, Robert Grisso, Thomas E. Diller, Alfred L. Wicks</i>	
Harvest Schedule to Fulfill Inventory for Truck Transport	2946
<i>Robert Grisso, Devita McCullough, John S. Cundiff, Jason Judd</i>	
Wetland Mapping Using Spatial Analyst and Soil Attributes	2963
<i>Richard A. Weber, Waylon D. Daniels</i>	
Use of a Resistance Meter to Locate Manure Suitable for Energy Recovery in Beef Cattle Feedyards	2980
<i>Roger A. Eigenberg, Bryan L. Woodbury</i>	
Electrical Conductivity As a Tool to Estimate Chemical Properties of Drainage Water Quality in the Des Moines Lobe, Iowa	2991
<i>Rohith K. Gali, Michelle L. Soupir, Matthew J. Helmets</i>	
Highlights of the Air Quality Education in Animal Agriculture Project	3000
<i>Richard R. Stowell, Jill M. Heemstra, Dennis D. Schulte, Ronald E. Sheffield, Eileen F. Wheeler, Kevin A. Janni</i>	
Reducing Process Errors in the Design of Agricultural Assistive Technology	3009
<i>R. W. Sturbridge, W. E. Field</i>	
Assessment of Bruise Damage by Vacuum Apple Harvester using an Impact Recording Device	3026
<i>Ruilong Luo, Karen M. Lewis, Qin Zhang, Shumao Wang</i>	
Assessment of Cotton Plant Nitrogen Status and Yield Potential Using Plant Height Mapping System	3038
<i>Ruixiu Sui, Daniel K. Fisher, Krishna N. Reddy</i>	
Temporal and Spatial Distribution of Soluble Reactive Phosphorus in Groundwater at a Dairy Farm in the Suwannee River Basin of Florida	3052
<i>Runbin Duan, George J. Hochmuth, Wendy Graham, Don Graetz</i>	
Model Development & Application for Inland Navigational Canals	3066
<i>Rebecca Zeckoski, Dongfang Liang</i>	
Effect of pH Levels of VFS Soil on Reducing Transport of Soluble Nutrients from Manure Borne Runoff	3077
<i>Atikur Rahman, Shafiqur Rahman, Larry Cihacek</i>	
Greenhouse Gas Emissions from Beef Cattle Pen Surfaces in North Dakota	3090
<i>Shafiqur Rahman, Md. Saidul Borhan, Kendall Swanson</i>	
Analysis of Aerial Multispectral Imagery to Assess Water Quality Parameters of Tibbee Creek, Clay County, Mississippi	3102
<i>Shane A. Irvin, Joel O. Paz, David L. Evans, Prem B. Parajuli</i>	
Microwave Meter for Rapid, Nondestructive Determination of In-Shell Peanut Kernel Moisture Content from Dielectric Measurements on Cleaned and Uncleaned Pod Samples	3119
<i>Samir Trabelsi, Micah A. Lewis, Stuart O. Nelson</i>	
Investigating Influence of Temperature on Radio-Frequency Dielectric Properties of Chicken Meat	3132
<i>Samir Trabelsi</i>	
Construction and Evaluation of Permeable Pavements and Bioretention in North Central Texas	3140
<i>Sandhya Mohan, Fouad Jaber</i>	
Characterization of Flax Fiber Reinforced Polylactic Acid (PLA) Biocomposite	3150
<i>Sarika Kumari, Anup Rana, Satyanarayan Panigrahi, Radhey Lal Kushwaha</i>	
Enzymatic Hydrolysis and Fermentation of Whole Sugar Beets for Ethanol Production	3159
<i>Nurun Nahar, Scott W. Pryor</i>	
Mitigating Ammonia Emission from Broiler Houses using a Novel Biodegradable Litter Amendment	3170
<i>S. N. Senyondo, J. Arogo Ogejo, R. S. Gates, F. W. Pierson, J. N. Walters</i>	
Evaluating GPS Guidance Technologies for Energy Savings	3187
<i>D. Kent Shannon, Charles E. Ellis</i>	
Experiences of Extension Education via Online Delivery of Programming Related to Precision Agriculture Technologies	3191
<i>D. Kent Shannon</i>	
Developing Low Pressure Treatments for Disinfesting Fresh Fruits	3202
<i>S. Jiao, S. Wang, J. A. Johnson, T. L. Davenport</i>	

A/C Condensate for Water Reuse: An Approach Towards Environmental Sustainability in Doha	3213
<i>Shashi Kant, Fouad H. Jaber, Hazim A. M. Qiblawey</i>	
Automated Machine for Thinning Lettuce - Development and Evaluation	3221
<i>Mark C. Siemens, Ryan Herbon, Ronald R. Gayler, Kurt D. Nolte, Davie Brooks</i>	
Development of an Audio and Video Observation and Recording Platform for Data Collection in a Broiler Growout Environment	3235
<i>Simeon Harbert, Douglas F. Britton, Wayne D. R. Daley, David V. Anderson, Guillermo Colon, Matthew Giannelli, Erin Hanson</i>	
Impact of Cutting Speed, Blade Type, and Blade Angle on Miscanthus Harvesting Energy Requirement	3245
<i>Justin D. Maughan, Sunil K. Mathanker, Brian M. Fehrenbacher, Tony E. Griff, Alan C. Hansen</i>	
Yield Monitoring and Mapping Systems for Hay and Forage Harvesting: A Review	3254
<i>Justin D. Maughan, Sunil K. Mathanker, Tony E. Griff, Alan C. Hansen</i>	
Direct Co-liquefaction of Hardwood and Coal.....	3261
<i>Saurabh Kumar, Kaushlendra Singh, John Zondlo, Wenjia Jin, Jingxin Wang, Jagpinder Singh Brar</i>	
In vitro Activity of Antimicrobials Alone and in Combination Therapy against Methicillin-resistant Staphylococcus pseudintermedius Biofilm Formation	3266
<i>Matthew Dicicco, Suresh Neethirajan, Ameet Singh, J. Scott Weese</i>	
Potential Capacities of Two Combined Heat and Power Plants Based on Available Corn Stover and Forest Logging Residue.....	3276
<i>Selvarani Radhakrishnan, Joel O. Paz, Fei Yu, Sandra Eksioglu, Donald L. Grebner</i>	
Investigating the Carbon Footprint and Stormwater Reduction in the Central North Texas: Examining LID Design and Construction Influences.....	3297
<i>Sa'D Shannak, Fouad Jaber</i>	
Increasing the Salinity Tolerance of Alfalfa to Improve the Effectiveness of Agronomic-Hydrologic Practices for Controlling Root-Zone Salinization.....	3306
<i>Harold Steppuhn, Alan D. Iwaasa, Jane Holzer, David W. Johnson, Mike Ulmer</i>	
CFD Simulation of Gas Mixing for Evaluation of Design Alternatives for On-Farm Mass Depopulation of Swine in a Disease Emergency	3323
<i>Larry F. Stikeleather, W. E. M. Morrow, R. E. Meyer, C. L. Baird, B. V. Halbert</i>	
Techniques for Measuring the Dielectric Properties of Agricultural Products	3337
<i>Stuart O. Nelson, Samir Trabelsi</i>	
Factors Influencing the Dielectric Properties of Agricultural Products and Food Materials	3354
<i>Stuart O. Nelson, Samir Trabelsi</i>	
Comparison of Two Spectrometers for Profile Soil Carbon Sensing	3366
<i>Anna M. Hodge, Kenneth A. Sudduth</i>	
Yield Editor 2.0: Software for Automated Removal of Yield Map Errors.....	3378
<i>Kenneth A. Sudduth, Scott T. Drummond, D. Brenton Myers</i>	
Performance of a Wireless Sensor Network for Crop Water Monitoring and Irrigation Control	3392
<i>Susan A. O'Shaughnessy, Steven R. Evett, Paul D. Colaizzi, Terry A. Howell</i>	
Dispatching and Routing of Robotic Crop-transport Aids for Fruit Pickers using Mixed Integer Programming.....	3423
<i>Stavros Vougioukas, Yiannis Spanomítrios, David Slaughter</i>	
Patterns of Estrogen Occurrence in Sewage Treatment Plant Effluent (STPE) from a University Campus	3433
<i>Senorpe Asem-Hiable, Herschel A. Elliott, Clinton D. Church, John E. Watson, Clinton F. Williams</i>	
Biomass-ethanol Supply Chain Optimization: Dynamic Facility Location Planning under Changing Supply and Demand	3446
<i>Tao Lin, Luis F. Rodríguez, Yogendra N. Shastri, Alan C. Hansen, K. C. Ting</i>	
Evapotranspiration and Crop Coefficients for Irrigated Sunflower in the Southern High Plains	3456
<i>Terry A. Howell, Steven R. Evett, Judy A. Tolk, Karen S. Copeland, Thomas H. Marek</i>	
Paper Number: 12-1338308.....	3484
<i>Tim Foutz, Kerri Patrick Singer, Maria Navarro</i>	
Watershed-Scale Land-Use Mapping with Satellite Imagery.....	3489
<i>Anh T. T. Nguyen, Allen L. Thompson, Kenneth A. Sudduth</i>	
Assessment of Cattle Impacts on Soil Characteristics in Integrated Crop-livestock Systems	3514
<i>Tong Liu, Luis F. Rodríguez, Angela R. Green, Daniel W. Shike, Jacob R. Segers, Guilherme Del Nero Maia, Heather D. Norris</i>	
Influence of Three Tannin Extracts Treatments on Air Emissions from Stored Steer Manure	3522
<i>Venkata Vaddella, Huawei Liu, Wendy Powers</i>	
Design of Crop Yield Estimation System for Apple Orchards Using Computer Vision	3532
<i>Qi Wang, Stephen Nuske, Marcel Bergerman, Sanjiv Singh</i>	
The Evolution of Two-Stage Agricultural Ditches In the United States	3545
<i>Jessica L. D'Ambrosio, Rebecca M. Kallio, Andy D. Ward, Jonathan D. Ward, Jen Tank, Sarah Roley</i>	
Pyrolysis Kinetics of Physical and Chemical Components of Wood using Isoconversion Method	3573
<i>W. Jin, K. Singh, J. W. Zondlo, J. Wang, J. S. Brar</i>	
Evaluating Cotton Stripper Field Performance	3579
<i>Wesley M. Porter, John D. Wanjura, Randal K. Taylor, Michael D. Buser</i>	
 Application of an Ag Leader Cotton Yield Monitor for Measuring Peanut Yield.....	3587
<i>Wesley M. Porter, Randal K. Taylor, Chad B. Godsey</i>	

The Impact of Material Components in Irrigation Pipe Applications	3595
White G. Jee, Sarah Patterson	
Motion Resistance on a Corn Silage Pile	3611
Jody Roades, Robert White	
Design and Calibration of Liquid Crystal Tunable Filter Based Spectral Imaging System	3625
Weilin Wang, Changying Li, E. W. Tollner, Ron Gitaitis, Glen Rains	
An Automated System for Monitoring and Controlling of Rice Wine Fermentation	3643
Dengfeng Liu, Weili Xiong, Guoqiang Xu, Baoguo Xu	
Co-deoxy-liquefaction of Swine Manure and Waste Vegetable Oil for Bio-oil Production	3652
Shuangning Xiu, Abolghasem Shahbazi	
Metals Removal Comparison of Grass Strip and Grass Swale	3660
Jingyi Zhang, Runbin Duan, Sha Chen, Danna Shen, Xubin Pan	
Pretreatment of Corn Stover for Enzymatic Saccharification Improvement by Using the Combination of Alkaline Reagents at Mild Temperatures	3681
Ximing Zhang, Jiele Xu, Pankaj Pandey, Jay J. Cheng	
Aerial Multispectral Imaging for Cotton Yield Estimation under Different Irrigation and Nitrogen Treatments	3694
Yanbo Huang, Ruixiu Sui, Steven J. Thomson, Daniel K. Fisher	
A Feasible Biofilter Media Moisture Sensor	3702
Liangcheng Yang, Xinlei Wang, Ted L. Funk, Sijie Shi, Richard S. Gates, Yuanhui Zhang	
Blueberry Fruit Detection by Bayesian Classifier and Support Vector Machine Based on Visible to Near-infrared M multispectral Imaging	3714
Ce Yang, Won Suk Lee	
Preliminary Testing of a System for Evaluating Picker Efficiency in Tree Fruit	3726
Yiannis Ampatzidis, Bikram Adhikari, Patrick Scharf, Matthew Whiting, Qin Zhang	
Use of NIR Technique to Validate the Relationship between Two Cotton Trash Measurements: Geometric vs. Gravimetric Method	3738
Yongliang Liu, Devron Thibodeaux, Gary Gamble, James Rodgers	
Prescription Maps for Precision Aerial Application	3749
Peng Song, Yubin Lan, Wei Li, Xianfa Fang	
Monitoring Soil Moisture Using Remote Sensing Humidity Index	3756
Zhitao Zhang, Yubin Lan, Junyong Chen, Yuannong Li	
Characteristics of Starch-Based Cellulosic Foam Made by Microwave Expansion	3765
Yuzhi Deng, Jeffrey M. Catchmark	
The Effect of Ecotype and Planting Location on Chemical and Elemental Composition of Big Bluestem	3772
Ke Zhang, Loretta C. Johnson, Donghai Wang	
Establishing a Dispersion-based Setback Model for Determination of Odor Impact from Livestock Facilities	3788
Zhu Gao, Amy La, Qiang Zhang, Huiqing Guo	
Simulating Dryland Water Availability and Spring Wheat Production under Various Management Practices in the Northern Great Plains	3796
Zhiming Qi, Patricia N. S. Barling, Jalal D. Jabro, Andrew W. Lenssen, William M. Iversen, Lajpat R. Ahuja, Liwang Ma, Brett L. Allen, Robert G. Evans	
Meta-Analysis of Greenhouse Gas Emissions from Swine Manure Land Application	3829
Zifei Liu, Wendy Powers	
Determination of Energy Requirements for Densifying Miscanthus and Switchgrass Feedstock with a Medium-scaled Compressor	3844
Zewei Miao, James W. Phillips, Tony E. Grift, Sunil K. Mathanker	
Study on Discoloration Dynamic Characteristics of Apple Slices after High Pressure Treatment	3855
Yi Lin, Yong Yu, Songming Zhu	
Comparison Between Dry and Wet Fermentation of Biomasses as Result of the Monitoring of Full Scale Plants	3866
Alessandro Chiumenti, Roberto Chiumenti, Francesco Da Borso, Sonia Limina	
Biogas Potential of Cow Slurry in Continuously Stirred Tank Reactors at Mesophilic and Thermophilic Temperatures	3870
A. O. Adebayo, S. O. Jekayinfa, B. Linke	
Effect of Co-Digestion on Biogas Production - A Case Study of Cow Slurry with Maize Cob	3890
A. O. Adebayo, S. O. Jekayinfa, B. Linke	
Cost Effective Development of a Mobile Conveying Melon Harvesting Robot	3907
Moshe Mann, Dror Rubinstein, Itzhak Shmulevich, Boaz Zion	
Quantification of Air Exchange Rates and Gaseous Emissions throughout Naturally Ventilated Dairy Barns	3923
Alaa Kiwan, Werner Berg, Hans-Joachim Müller, Manfred Gläser, Merike Fiedler, Christian Ammon, Reiner Brunsch	
Automatic Identification of Activity Levels of Broiler Chickens with Different Gait Score in a Small Flock.	3937
A. Aydin, C. Bahr, A. Pluk, D. Berckmans	
Trend Analysis of Rainfall and Run-off and its Significance in Irrigation Planning-A Case Study of Sikta Irrigation	3950
Ashish Pandey, Hari Datta Paudel	
Compensating Emitter Using CFD-CSD Technology	3967
Wen Wang, Vincent F. Bralts, Jing Wang	
The "Threads" of Biosystems Engineering	3978
Demetres Briassoulis, Eutiquio Gallego, Antonio Marco Pantaleo, Nicholas Holden, Philip Owende, K. C. Ting, Kumar Mallikarjunan	

Development of a Wireless Sensor Network for Soil Moisture Monitoring in Precision Agriculture	4019
<i>Man Zhang, Weizhen Wang, Chunhong Liu, Hongju Gao, Minzan Li</i>	
Influence of Wastewater on the Physical-Chemical Properties of Soil	4027
<i>Vanessa R. Urbano, Thaís G. Mendonça, Maria Leonor, Reinaldo G. Bastos, Claudinei F. Souza</i>	
Evaluation of Sanitary Quality of Letuce (Lactuca Sativa, L.) Irrigated with Reuse Water in Comparison with Traded Samples	4038
<i>Claudinei Fonseca Souza, Antonio Claudio Testa Varallo, Josiane Marioto De Souza, Simone Sano Rossi Rezende, Vanessa Ribeiro Urbano</i>	
Identification of Wholesome and Unwholesome Chicken Carcasses by Line Spectra of Hyperspectral Image	4048
<i>Ching-Lu Hsieh, Jau-Ting Wu, Chieh-Cheng Chang, Chun-Jung Chen</i>	
Development of Automated Manual Transmission of Agricultural Tractor Using Electric Actuators	4066
<i>Yong-Joo Kim, Chang-Hyun Choi, Dae-Hyun Lee</i>	
Air Impingement Drying Model of Chestnut	4075
<i>Zheng Lou, Hongwei Xiao, Xiaoyu Tian, Zhenjiang Gao</i>	
Predicting Calorific Values of Pellets Produced from Varying Blends of Energy Grasses and Wood using Hyperspectral Imaging	4085
<i>Colm D. Everard, Colette C. Fagan, Gary Gillespie, Kevin P. McDonnell</i>	
Experimental Study on the Impacts of Operating Parameters to the Performance of Air-blowing Seedmetering Device	4093
<i>Jia Liu, Tao Cui, Dongxing Zhang, Li Yang, Song Shi</i>	
In Vitro Selection of High Starch Duckweed Growing Around Taihu Lake Basin	4107
<i>Weihua Cui, Yuan Gao</i>	
3D Reconstruction of Chinese Hickory Trees for Mechanical Harvest	4122
<i>Leiyang He, Xiaoqiang Du, Gaohe Qiu, Chuanyu Wu</i>	
Nitrogen and Phosphorus Availability Following Topsoil Application of Mineral and Organomineral Fertilisers (OMF)	4134
<i>D. L. Antille, R. Sakrabani, R. J. Godwin</i>	
Determination of the Bands for Thermal Comfort of Broiler Different Ages	4151
<i>Déborah C. Cassuce, Ilda F. F. Tinóco, Fernando C. Béta, Sérgio Zolnier, Maria De Fátima Araújo Vieira, Fernanda C. Sousa</i>	
A Wireless Multi-sensor Network Deployment Framework for Wildland Fire Detection	4157
<i>Deqin Xiao, Xiaoqing Jiang, Jianzhao Feng, Yueming Hu</i>	
Deployment of Wireless Soil Moisture Sensor Network in Zengcheng Experiment Farm	4163
<i>Feng Jianzhao, Xiao Deqin, Hu Yueming</i>	
Performance Analysis Technologies of Prototype Machine for The Development of an Orchard Tractor	4171
<i>N. S. Sung, D. S. Park, J. C. Kim, D. I. Chang, K. D. Kim, Y. K. Huh, S. O. Chung, J. S. Cho, J. K. Ha, S. J. Park</i>	
The Evaluation of a General Purpose Bale System Performance and Its Bale Quality	4177
<i>Dongil Chang, Sunok Chung, Dongseok Park, Namseok Sung, Jungchul Kim, Inhyun Lee</i>	
Sweetness And Nutritional Potentials of Marantochloa Cuspidata (ROSC) Fruit	4185
<i>E. U. U. Ituen</i>	
Studies on the Yield and Properties of Biodiesel from Jatropha Curcas L. Seeds	4196
<i>Isaac N. Itodo, Ambo M. Ezekiel, Samuel E. Obetta</i>	
Experimental and Theoretical Investigation of Rough Rice Drying in Infrared-assisted Hot Air Dryer Using Artificial Neural Network	4210
<i>Dariush Zare, Hossein Naderi, Abdolabbas Jafari</i>	
Stress Relaxation of Date at Different Temperature and Moisture Content of Product: A New Approach	4225
<i>Dariush Zare, Mohsen Alirezaei, Seyed Mehdi Nassiri</i>	
Determination of Physical Properties of Sour Orange Juice Powder Produced by a Spray Dryer	4240
<i>Dariush Zare, Alireza Salehi, Mehrdad Niakousari</i>	
Finite Element Modeling of Green Fig Drying	4254
<i>Dariush Zare, Aso Fathi, Mohsen Ranjbaran</i>	
Combined Microwave-fluidized Bed Drying of Moist Granular Particles: CFD Modeling and Validation	4269
<i>Dariush Zare, Mohsen Ranjbaran</i>	
The Paramo Ecosystems, Wetlands, and Oak Forests in The River Basin of Rio Grande in Antioquia (Colombia) in a Proposal for Sustainable Water Management.	4282
<i>Eugenio González Castrillón</i>	
Software Development Tool for Agricultural Machinery Based on IsoAgLib Open Source Library	4295
<i>Woonchul Ham, Enkhbaatar Tumenjargal, Luubaatar Badarch, Hyekjae Kwon</i>	
Some Physical Properties of African Nutmeg (Monodora Myristica) Seed Relevant to its Processing	4305
<i>A. Folarin Alonge, Edidiong J. Udoefot</i>	
A Controlling Method for a U-turn Mode of Automated Rice Transplanters	4316
<i>Fangming Zhang, Zhigang Liu, Yuan Li, Ximing Feng</i>	
Research on Description of Fruit Shape Based on Machine Vision	4324
<i>Fujie Wang, Xiuqin Rao, Yibin Ying</i>	
Packing House Simulation to Increase Productivity of a Green Ornamentals' Farm	4333
<i>Gad Vitner, Avital Bechar</i>	
Application Analysis of Groundwater System Prediction Model	4338
<i>Pei Ling Gao, B. A. Engel</i>	
The Modification of Soil Moisture Deficit Calculation Using Topographic Wetness Index to Account For the Effect of Slope and Landscape Position	4346
<i>Gillian L. Lewis, Nicholas M. Holden</i>	

Development of an Agricultural NPS-Web Data Management System for Small Watersheds.....	4361
<i>Jihoon Park, Moon-Seong Kang, Inhong Song, Jae-Pil Cho</i>	
Developing a Combination Model of Agricultural Machine for Optimization GHG's based on LCA	4368
<i>Hyeongryeol Lee, Jeong-Bae Jeon, Jinseon Park, Gyuha Kim, Seong-Soo Yoon</i>	
Detecting the Quality of Dried Apricots Using Fusion Information of Machine Vision and Near-infrared Spectroscopy.....	4381
<i>Xingyi Huang, Mei Qian, Fubin Xu</i>	
Study on Moisture On-line Prediction System of Extruded Feed Based on Neural Networks.....	4395
<i>Jie Yang, Hongying Wang, Erte Wei, Yang Gao, Lixia Song</i>	
Modeling and Analyzing of Energy Consumption in the Process of Wet Extrusion for Aquaculture Feed.....	4407
<i>Lu Wang, Hongying Wang, Junguo Li, Jie Yang, Wencheng Huang</i>	
Study on Palatability Evaluation System of Pellet Feed	4421
<i>Jie Yang, Hongying Wang, Bing Hu, Yang Gao</i>	
Design and Experimental Study on Multilayer Scraper Manure Cleaning System used in Semi-ladder Coop Rearing Welfare Facility.....	4428
<i>Heng Li, Baoming Li, Hongying Wang, Jie Yang, Hongbin Kang, Tengfei Li</i>	
Research on the Impact of the Characteristic Parameters of Airblast Rotating Cage Sprayer to Droplet Size	4443
<i>Hongping Zhou, Linyun Xu, Wei Song, Yemin Cui, Hua Cui, Zhicheng Jia, Huichun Zhang</i>	
Influence of Compression Platen on Specific Energy of Bale Recompressing.....	4455
<i>Wencheng Huang, Decheng Wang, Guanhui Wang, Yang Gao, Lu Wang</i>	
Classification of Vegetable Soybean Based on Hyperspectral Images	4466
<i>Xiangmei Wan, Min Huang, Qibing Zhu, Min Zhang, Jishuan Chen</i>	

Volume 6

Feature Wavebands Selection Using Immune Genetic Algorithm for Prediction of Soluble Solids Content in Citrus Fruit	4477
<i>Qibing Zhu, Xin Zhao, Min Huang</i>	
Detection of Bruise and Stem-end/Calyx of Apples Using Hyperspectral Imaging and Segmented Principal Component Analysis.....	4488
<i>Wenqian Huang, Chi Zhang, Jiangbo Li, Liping Chen, Chunjiang Zhao</i>	
Kinetic Models for Determining Vitamin C Content in Fresh Jujube and its Shelf Life.....	4503
<i>C. Liu, Y. Hu, L. Zhao, C. Wang, K. Guo</i>	
A Comparison of the Performance of VIS/NIR Sensors Used to Inform Nitrogen Fertilization Strategies.....	4513
<i>Philippa McVeagh, Ian Yule, Jemma Mackenzie</i>	
Improving the Field CV of Aerial Topdressing; Through Computer Controlled Prescription Delivery.....	4526
<i>Miles Grafton, Ian Yule, Ray Watson</i>	
Effect of Chemical Conditioners on the Quality of the Poultry Litter	4532
<i>Cecília De Fátima Souza, Cláudia Ribeiro Dos Santos, Keles Regina Antony Inoue, Ilda De Fátima Ferreira Tinóco, Marilú Santos Sousa, Holmer Savastano Jr.</i>	
Chemical and Microbiological Characterization of Quail Wastes.....	4545
<i>Marilú Santos Sousa, Ilda De Fátima Ferreira Tinóco, Cecília De Fátima Souza, Keles Regina Antony Inoue, Antônio Teixeira De Matos</i>	
CFD Modeling of Air Quality Inside Naturally Ventilated Broiler Barns As a Function of Barn Spatial Arrangement	4553
<i>Jairo Alexander Osorio Saraz, Keller Sullivan Oliveira Rocha, Ilda De Fátima Ferreira Tinóco, Richard S. Gates, Luciano Barreto Mendes, Tomas Norton, Robinson Osorio Hernandez</i>	
Spatial Distribution and Characteristics of Agricultural Damages by Extreme Weather Occurrence in Korea	4562
<i>Inhong Song, Moon-Seong Kang, Soon-Ho Hwang, Sang-Min Kim, Min-Won Jang</i>	
NPS Pollutant Loads from the Soy Bean Cultivation in the Tidal Reclaimed Uplands As Affected by Different Fertilizer Types	4569
<i>Inhong Song, Ji-Hye Kim, Moon-Seong Kang, Kyong-Do Lee, Jeong-Ryeol Jang</i>	
Impact of Climate Change on Extreme Drought Events in Ken River Basin, India	4578
<i>Manoj K. Jain, Vinit K. Jain, R. P. Pandey</i>	
Analysis of Cellulose-degrading Microbes in Anaerobic Co-digestion of Swine Manure with Corn Stover	4594
<i>Taoyuan Wei, Zhaoyang You, Zhimin Liu, Jorge Gonçalves, Jay J. Cheng</i>	
Screen-printed Potentiometric Strip for Calcium Ion Determination in Water and Milk	4601
<i>Jianfeng Ping, Jian Wu, Yibin Ying</i>	
Model to Design Drip Hose Lateral Line Using Two Spacing between Emitters.....	4610
<i>Rafael Ludwig, João Carlos Cury Saad</i>	
Relationship between Citrus Productivity and Indicators of Uniformity in Trickle Irrigation System	4621
<i>João Carlos Cury Saad, Hélio Moreira Da Silva Jr.</i>	
Model to Increase the Lateral Line Length of Drip Irrigation Systems.....	4628
<i>João Carlos Cury Saad, Rafael Ludwig</i>	
Gross Primary Production Using Related Vegetation Indices	4639
<i>Magna Soelma Beserra De Moura, Josicleida Domiciano Galvâncio, Bernardo Barbosa Da Silva, Celia Cristina Clemente Machado, Hewerton Alves Da Silva, Tiago Henrique De Oliveira</i>	
Relationship between Vegetation Indices and Canopy Chlorophyll in GPP Estimation	4650
<i>Josicleida Domiciano Galvâncio, Bernardo Barbosa Da Silva, Magna Soelma Beserra De Moura, Celia Cristina Clemente Machado, Hewerton Alves Da Silva, Tiago Henrique De Oliveira</i>	

Physico-chemical Properties of the Soursop Fruit (<i>Annona Muricata L. Cv. Elita</i>) in Postharvest.....	4661
<i>Carlos Julio Márquez Cardozo, José Régulo Cartagena Valenzuela</i>	
An Environmentally Sound Technology for Coffee Washing	4673
<i>Carlos E. Oliveros-Tascón, Juan R. Sanz-Uribe, Cesar A. Ramírez-Gómez</i>	
Design, Development and Evaluation of a Mechatronic Transmission System for Upgrading Performance of a Row Crop Planter.....	4681
<i>Saadat Kamgar, Mohammad J. Eslami</i>	
Emission Performance of a Diesel Engine Running on Soybean Methyl Ester and its Blends with Diesel Fuel at Different Compression Ratios	4692
<i>Saadat Kamgar, Vahid Dadi</i>	
Implementation of Greenhouse Monitoring and Control System Using a Smartphone and a Computer with Internet	4708
<i>D. E. Kim, G. I. Lee, D. H. Gang, Y. H. Kim, H. J. Lee, S. Y. Lee, J. W. Heo</i>	
Autonomous Irrigation Controller for Korean Greenhouse Plants.....	4716
<i>Won-Kyung Kim, Hak-Jin Kim, Dong-Hoon Lee, Sun-Ok Chung, Jin-Yung Choi, Kyung-Hwa Han</i>	
Development of Path Generation Algorithms for Korean Auto-guidance Tillage Tractor	4723
<i>Xiongze Han, Hak-Jin Kim, Hee-Chang Moon, Young-Sun Kang, Jung-Hun Kim, Young-Joo Kim</i>	
Effects of Sediment Traps Connected to the VFS Systems.....	4733
<i>Kyung-Sook Choi, Jeong-Ryeol Jang</i>	
Evaluation of L-times for Soil Disturbance During Mechanized Cassava Harvesting.....	4738
<i>L. A. S. Agbetoye, I. Illevbare</i>	
Probability Analysis of Plane Strain Element using Boundary Element Method.....	4748
<i>Heongryeo Lee, Jeongbae Jeon, Jin-Seon Park, Seong-Soo Yoon</i>	
Yield and Quality Castor and Jatropha Oil as a Function of Organic and Mineral Fertilizer	4766
<i>Josely Dantas Fernandes, Lucia Helena Garofalo Chaves</i>	
Growth of Cocoa as a Function of Water and Nitrogen	4776
<i>Roger Luiz Da Silva Almeida, Lucia Helena Garofalo Chaves</i>	
A Real-Time Monitoring System for Cropland Based on Network Video.....	4784
<i>Dong Liang, Hongji Gao, Siyu Li, Li Li, Sulei Li</i>	
Effects of Drip System Uniformity on Cotton Yield and Quality under Arid Conditions	4794
<i>Hongjie Guan, Jiusheng Li, Yanfeng Li</i>	
Responses of Tomato Yield and Water Consumption to Water Quality and Drip Irrigation Technical Parameters	4815
<i>Yanfeng Li, Jiusheng Li, Jiangli Wen</i>	
A Wireless Sensor Network for Soil EC Measurement.....	4826
<i>Ao Li, Minzan Li, Zhuo Wang, Mingqian Sun, Hui Shen</i>	
A Movable Platform for Field Information Acquisition	4837
<i>Deng Xiaolei, Li Minzan, Zheng Lihua, Sun Mingqian, Shen Hui</i>	
Application of Multi-spectral Images and Remote Sensing in Precision Crop Management	4849
<i>Ruijiao Zhao, Minzan Li, Hong Sun, Yane Zhang, Wei Yang</i>	
Application of NIRS in Soil Sensing	4858
<i>Xiaofei An, Minzan Li, Lihua Zheng</i>	
Effects of Air Drying and Mechanical Drying on Thermal Properties of Corn.....	4869
<i>Hongbin Kang, Niwei Li, Jie Yang, Hongying Wang, Rui Gao</i>	
Design and Research of the Vibrating Potato Excavator.....	4878
<i>Yuanyuan Liu, Dongxing Zhang, Wei Lan</i>	
Comparative Research on Hydraulic Performance of Sprinkler Heads in Sprinkler Irrigation.....	4885
<i>Junping Liu, Shouqi Yuan, Hong Li, Xingye Zhu</i>	
Comparison of Uniform and Targeted Discrete-Flame Weeding Methods for Inter-row Weed Control in Maize Planting	4892
<i>Mohammad Loghavi, Reihaneh Loni</i>	
Development of an Optimized Forage Harvest Machinery System Selection Factors Analysis Model Using Analytic Network Process and DEMATEL	4903
<i>Donghui Lu, Gongze Qi, Zhiqin Wang, Di Zhang, Jiansong Gao, Decheng Wang</i>	
Spatial Model for Wheat Cross-Districts Machinery Harvest Benefits Analysis in China	4912
<i>Zhiqin Wang, Donghui Lu, Renpu Bai</i>	
Hydrologic Safety Assessment of Agricultural Reservoirs under Climate Change Scenarios	4922
<i>Ji Hye Kim, Moon Seong Kang, In Hong Song</i>	
Evaporation Rate of Emulsion and Oil-base Emulsion Pheromones	4930
<i>Linyun Xu, Yuanxiang Ji, Hongping Zhou, Heping Zhu, Harold W. Thistle</i>	
A Real-Time Stereo Vision System for Obstacle Detection and Recognition	4943
<i>Ta-Te Lin, An-Chih Tsai, Kai-Chiang Chuang, Yu-Chou Chen, Yu-Sung Chen</i>	
Water Seepage Rate from Clay Emitters.....	4960
<i>Majed Abu-Zreig, Amjad Abo-Izreik, Mohamed A. Abd Elbasit</i>	
Soil Reclamation and Drainage with Evaporation Drainage Methods	4968
<i>Amjad Abo-Izreik, Majed Abu-Zreig</i>	
Investigation of Irrigation Development among Rural Farmers in Ogun State, Nigeria.....	4975
<i>J. O. Akinyemi</i>	
Kinetic Studies on Stem Bark of Corn Stalk Liquefaction in Ethylene Carbonate	4981
<i>Tipeng Wang, Ali Mohammed Ibrahim Zayan, Zhihuai Mao</i>	

Differences of Pyrolyzed Products of Microalgae upon Temperature	4991
<i>Yuguang Zhou, Changchun Hao, Zhihuai Mao</i>	
Mathematical Modeling of Microwave Vacuum Drying of Chinese Yam	5001
<i>Guangyue Ren, Qinghua Han, Zhihuai Mao, Xu Duan, Wenxue Zhu</i>	
Fuel Economy Analysis of Corn Combine Harvesters in Field Operation	5015
<i>Wei Qing, Mao Zhihuai, Liu Qing</i>	
The Effect of Microwave Vacuum Drying on the Quality of Tiegun Yam	5027
<i>Guangyue Ren, Zhihuai Mao, Xiaoyan Du, Dong Li, Wenxue Zhu</i>	
Corn Stover Liquids for Sand Soil Particles Stabilization: Laboratory Wind Tunnel Study	5040
<i>Ali Zayan, Zhihuai Mao, Yanhong Liu, Tipeng Wang, Yuguang Zhou</i>	
Current Situation Analysis of Corn Processing Technologies and Equipments in Production Place of China	5053
<i>Qing Wei, Zhihuai Mao, Qing Liu</i>	
Partial Nitritation + ANAMMOX Process for Nitrogen Removal from Swine Wastewater	5066
<i>Marina C. De Prá, Airton Kunz, Marcelo Bortoli, Tiago Perondi, Angélica Chini, Hugo M. Soares</i>	
Characterization and Analysis of Two Types of Reused Broiler Litter	5074
<i>Maria De Fátima A. Vieira, Ilda De Fátima F. Tinoco, Bernadete M. Santos, Cecília De Fátima Souza, Richard Gates, Luisa Lolli</i>	
Partial Nitritation + ANAMMOX Process for Nitrogen Removal from Swine Wastewater	5081
<i>Marina C. De Prá, Airton Kunz, Tiago Perondi, Angélica Chini, Hugo M. Soares</i>	
Monitoring of Atmospheric Carbon Monoxide fluxes in Predicting the Commencement of Planting Season in West Africa	5089
<i>M. L. Akinyemi</i>	
Exergy Analysis Applied to the Design of Grain Dryers with Air Flow Recirculation	5096
<i>Rafael Pinheiro Amanteá, Maurí Fortes, Gisele Tessari Santos</i>	
Optimization Aspects of Dryeration Based on Drying Simulation Analysis of a Single Corn Kernel	5119
<i>Gisele Tessari Santos, Maurí Fortes, Rafael Pinheiro Amanteá, Wanir Romero Ferreira</i>	
An Production and Consumption Analysis of CO₂ in Rural Area using Remote Sensing (in Korea)	5144
<i>Jeong-Bae Jeon, Sang-II Na, Seong-Soo Yoon, Jong-Hwa Park</i>	
Texture Changes of High Pressure Processed Fresh-cut Carrots Combined Pretreatment	5159
<i>Hongmin Zhang, Yong Yu, Songming Zhu</i>	
Comparative Performance of Okra (<i>Abelmoschus Esculentus</i>) Under Drip and Sprinkler Irrigation Systems in the Humid Tropics of Nigeria	5170
<i>M. O. Alatise, O. O. Oladeji, O. E. Joseph</i>	
Hydrological Models and Applications for Managing Water Resources in Osun River Basin Nigeria	5180
<i>M. O. Alatise, B. O. Adeboye</i>	
Kernel Extraction Quality in Walnut	5190
<i>Mazhar Kara, Faith Kalkan, Ismail Öztürk, Saim Bastaban</i>	
Precise Soil Sampling Method for Agricultural and Environmental Research Based on New Circular Soil Probe Apparatus	5205
<i>Milan Mesic, Ivana Sestak, Ivica Kisic, Zeljka Zgorelec, Aleksandra Jurisic</i>	
Mole Drainage for Improving Salty Clay Shallow Saline Watertable, Egypt	5221
<i>Mohamed M. Moukhtar, Madiha H. El-Hakim, Mohamed A. B. El-Sheikh</i>	
Biomass Energy Conversion in EFGT (Externally Fired Gas Turbine): An Experimental-Numerical Analysis	5231
<i>Stefano Cordiner, Vincenzo Mulone</i>	
Analysis of Effects of Grain Dust Explosion Using Computational Fluid Dynamics	5247
<i>Janaína A. Silva, Francisco C. Gomes, Jefferson L. G. Correa, Ludmila Magalhães</i>	
A Process-Based Method for Evaluating Terrace Runoff and Sediment Yield	5255
<i>Hui Shao, Claire Baffaut, Jian'En Gao</i>	
Development of an International ‘Innovation and Entrepreneurship’ Course for Biosystems Engineering Undergraduates	5270
<i>Francisco Ayuga, Nicholas M. Holden</i>	
A Preliminary Study on the Soil Heavy Metals of Spatial Variability and Sampling Model in Field Scale	5278
<i>Shengwei Wang, Juan Feng, Yulin Guo, Gang Liu, Yong Mei</i>	
A Novel 3D Laser Vision System for Robotic Apple Harvesting	5290
<i>Juan Feng, Gang Liu, Shengwei Wang, Lihua Zeng, Wen Ren</i>	
Optimal Water Allocation in Irrigation Networks Based on Real Time Climatic Data	5302
<i>Masoud Parsinejad, Amir Bemani Yazdi, Shahab Araghinejad, Pouyan Nejadhashemi</i>	
Design and Installation of Runoff-sediment Cascade Monitoring Stations at Parallel Qiaozhi-East and Qiaozhi-West Watersheds	5318
<i>Cuiping Yuan, Qinghong Yan, Yuequn Dong</i>	
Spatial Attitude of Lodged Sugarcane Stalk in Field	5329
<i>Qingtong Liu, Jinkan Chen, Yinggang Ou</i>	
Upgrading a Conventional Row Crop Planter to a Direct Seeding Machine for Planting of Corn in Conservation Farming System	5339
<i>Mohammad Hossein Raoufat, Jalil Nejadi</i>	
Experiences from Subsurface Drainage Technology Pilot Areas of Andhra Pradesh, India	5350
<i>Raghu Babu Movva, Venkata Satyanarayana Tammineedi, Yella Reddy Kaluvai, Srinivasulu Ale</i>	
Water Productivity into Biomass and Energy for 24 Brazilian Sugarcane Varieties Under Drip Irrigation	5360
<i>Rubens Duarte Coelho, Rafael Maschio, Daniel Philipe Veloso Leal, Fernando Da Silva Barbosa, Robson Mauri</i>	

Assessing the Impacts of Climate Change on Waterborne Microorganisms.....	5378
<i>Rory Coffey, Brian Benham, Leigh Anne Krometis, Mary Leigh Wolfe, Enda Cummins</i>	
Effect of Using Double Layers of Polyethylene Cover with Air Gap on Control Environment Inside Greenhouses.....	5388
<i>Sirelkhatim K. Abbouda, Emad A. Almuhanna, Ali M. Al-Amri</i>	
Reconstruction of Old Gutter-Connected Dairy Barns: A Case Study.....	5401
<i>Mohamed Samer</i>	
The Effect of Soil Moisture Deficit on the Susceptibility of Soil to Compaction As a Result of Vehicle Traffic	5419
<i>S. E. Vero, D. L. Antille, S. T. J. Lalor, N. M. Holden</i>	
Temperature Compensation for VIS/NIR Spectroscopy Measurement of Chinese Rice Wine Quality	5435
<i>Fei Shen, Yibin Ying, Bobin Li</i>	
Developing A Systematic Direct Method of Discharge and Diameter Calculations Required to Solve Simple Piping Systems Problems	5447
<i>Shereef Mohamed Metwally Abd El Aal</i>	
FFT Analysis of Load Data during Field Operations Using a 75-kW Agricultural Tractor	5465
<i>Myong-Jin Ryu, Sun-Ok Chung, Yong-Joo Kim, Dae-Hyun Lee, Chang-Hyun Choi, Kyeong-Hwan Lee</i>	
Remote Monitoring System for Greenhouse Environment using Mobile Devices	5475
<i>Sin-Woo Kang, Sun-Ok Chung, Ki-Dae Kim, Hak-Jin Kim, Jin-Yong Choi, Ying-Sun Zhang, Kyung-Hwa Han</i>	
Estimation of Electricity Generation for a Solar-Tracking Photovoltaic System.....	5485
<i>Keun-Soo Bae, Sun-Ok Chung, Jae-Woong Kong, Yun-Kun Huh, Dong-Hoon Lee</i>	
Construction and Operational Test of a Plant Factory.....	5497
<i>Dong-Ki Ryu, Sun-Ok Chung, Sang-Un Park, Sun-Ju Kim, Yong-Pyo Lim</i>	
Development of a Thresher for Small Grain Cereal Crops.....	5506
<i>Sun-Ok Chung, Sin-Woo Kang, Ki-Youl Jung, Sung-Chang Cho, Joon-Gul Park</i>	
Weeding Control System for Variable Target Spraying Based on Fuzzy Control	5513
<i>Shuren Chen, Hongyang Han, Dongfu Yin, Gang Chen</i>	
Combination of Variable Selection Methods and VIS/NIR Spectroscopy for Assessing Soluble Solids Content of "Gannan" Navel Oranges	5522
<i>Tong Sun, Wenqiang Wu, Wenli Xu, Muhua Liu, Wanhuai Zhou</i>	
Research of Prevention of Pine Caterpillars Applying Aerial Electrostatic Spraying Technology	5533
<i>Yu Ru, Hongping Zhou, Chaoran Shu, Jiazhai Cheng, Yubin Lan</i>	
Measurement of Growth Information of a Strawberry Plant Using a Natural Interaction Device.....	5547
<i>Satoshi Yamamoto, Shigehiko Hayashi, Sadafumi Saito, Yoshiji Ochiai</i>	
Root Temperature Control System Using Cold Water in Greenhouse	5557
<i>Noriko Takahashi, Hiroshige Nishina, Kotaro Takayama, Ryo Ebara, Seiichi Arima, Kenji Hatou, Yuko Ueka, Yuzuru Miyoshi</i>	
Investigation of the Compression Characteristics of <i>Leymus chinensis</i> L.....	5563
<i>Tianyi Wang, Guanghui Wang, Decheng Wang, Lope G. Tabil</i>	
Accurate Measurement of Landslide Volume and Morphology in Wenchuan Earthquake Area with 3D Laser Scanner	5572
<i>Zhanpeng Chen, Tingwu Lei, Heng Hu, Qinghong Yan, Zhenlin Li, Peiling Gao</i>	
Productivity and Water Suppression in Different Beans (<i>Phaseolus vulgaris</i> L.) Phenological Stages	5583
<i>Thomas Jose Justo Miorini, João Carlos Cury Saad</i>	
On-the-Go Laser-based Sensing System for Measuring Plants Height Using an Autonomous Tractor	5588
<i>Tofael Ahamed, Noguchi Ryozo, Tomohiro Takigawa</i>	
Optimization of Sprinkler Irrigation Machine Based on Genetic Algorithms.....	5598
<i>Qin Tu, Xinkun Wang, Hong Li</i>	
Evaluation of the CAT Model in Hydrological Simulation for a Small Watershed.....	5610
<i>Soonho Hwang, Moonseong Kang, Seungwoo Chang, Inhong Song</i>	
Onion Quality Assessment Using a Near Infrared Hyperspectral Imaging System	5617
<i>Haihua Wang, Changying Li, Maohua Wang</i>	
Experimental Study on Cutting and Chopping Corn Straw with Different Moisture Content	5628
<i>Hongfang Yuan, Decheng Wang, Guanghui Wang, Zuoli Fu, Sangni Cai, Fang Liang</i>	
Structural Optimization and Modal Analysis for the Framework of Herbage Cutting and Chopping Machine	5638
<i>Sangni Cai, Decheng Wang, Hongbin Ren, Hongfang Yuan, Guanghui Wang, Wencheng Huang</i>	
Polysaccharide Extracts from <i>Lentinus Edodes</i> Stems Assisted By High Pressures Processing.....	5648
<i>Jing Wang, Yong Yu, Jinsong He, Songming Zhu, Jianping Li</i>	
Study on the Frost Monitoring Method for Tea Plant Based on Wireless Sensor Networks.....	5656
<i>Xinzhou Wang, Pengfei Kong, Min Wang, Run Yan</i>	
The Relationship Between the Parameters of the Rotation Cutter and the Mowing Area	5666
<i>Fang Liang, Decheng Wang, Guanghui Wang, Hongjie Chen, Yong Yu</i>	
Temporal & Spatial Scheduling Model for Agricultural Machinery	5673
<i>Yaping Cai, Caicong Wu, Huaihong Su, Lianjun Ding, Mengjia Luo</i>	
Mobile Monitoring and Center-navigation Technology for Agricultural Machinery	5684
<i>Mengjia Luo, Caicong Wu, Yaping Cai, Huaihong Su, Lianjun Ding</i>	
Absorbance Experiments on Different Pesticide Formulations and Mixed Concentration Sensor Design	5696
<i>Xianping Guan, Baijing Qiu, Xiaodong Zhang, Zhiyu Zuo, Xiaoya Dong</i>	
Mechanical Admittance Measurement and Analysis of Chinese Hickory Trees under Impact Excitations	5707
<i>Shaozhong Chen, Xiaoqiang Du, Chuanyu Wu</i>	

Prediction of Physiological Responses of Holstein Dairy Cows.....	5719
<i>Yamid Fabián Hernández Julio, Tadayuki Yanagi Jr., Maria De Fátima Ávila Pires, Marcos Aurélio Lopes, Renato Ribeiro De Lima</i>	
Estimate of the Weight of Japanese Quail Eggs Through Fuzzy Sets Theory.....	5740
<i>Jaqueleine De Oliveira Castro, Alessandro Vieira Veloso, Tadayuki Yanagi Jr., Edison José Fassani, Leonardo Schiassi, Alessandro Torres Campos</i>	
Lighting Systems for Broiler Houses.....	5751
<i>Priscilla Abreu Pereira, Tadayuki Yanagi Jr., Joaquim Paulo Da Silva, Renato Ribeiro Lima, Alessandro Torres Campos, Lucas Henrique Pedroso Abreu</i>	
Spatial Variability of Air Temperature In A Broiler House During The Heating Phase	5766
<i>Patrícia Ferreira Ponciano, Tadayuki Yanagi Jr., Gabriel Araújo E Silva Ferraz, João Domingos Scaloni, Leonardo Schiassi</i>	
An Optical Sediment Sensor Integrated with Flow Velocity Measurement	5777
<i>Yali Zhang, Naiqian Zhang, Darrell Oard</i>	
System Development for Detection of Pesticide in Apple.....	5794
<i>Sagar Dhakal, Yankun Li, Yankun Peng, Yunyun Sun</i>	
Non-destructive Detection of Water Content in Fresh Pork based on Visual/Near-Infrared Spectrum.....	5802
<i>Haiyun Zhang, Yankun Peng, Wei Wang, Songwei Zhao, Sagar Dhakal</i>	
Real-time Detection of Natural Bruises in Apple Surface using Machine Vision	5811
<i>Yankun Peng, Juan Zhao, Sagar Dhakal, Tong Zhou</i>	
Real-time Evaluation System of Pork Freshness based on Multi-channel Near-infrared Spectroscopy.....	5823
<i>Yankun Peng, Songwei Zhao, Wei Wang, Haiyun Zhang</i>	
Demonstration Research for Sugarcane Mechanization Production in China	5832
<i>Xiuying Tang, Weilong Yang, Yankun Peng, Teqing Chen</i>	
Classification of Pork Quality Characteristics by Hyperspectral Scattering Technique.....	5842
<i>Feifei Tao, Xiuying Tang, Yankun Peng, Sagar Dhakal</i>	
Development of Intelligent Irrigation System, Robot Transporter, and Precision Artificial Lighting System for Moss Mat Production in a Fully Controlled Plant Factory	5852
<i>Yusuf Hendrawan, Bambang D. Argo, M. Bagus Hermanto, Song Zhang, Haruhiko Murase</i>	
On-Site Determination of Heavy Metal in Soil Using Electrochemical Stripping Analysis.....	5864
<i>Zhiqiang Wang, Liu Gang, Xiaojing Yang</i>	
Performance of an Oscillating Subsoiler in Reducing Resistance.....	5878
<i>Xia Li, Dongxing Zhang, Rui Zhang, Abdalla. N. Osman</i>	
Research of the Torque Testing System in the Spiral Rotary Tillage and Stubble-Mulch Roller based on Virtual Instrument	5893
<i>Guozhong Zhang, Yong Zhou, Junfang Xia, Qichuan Xu, Haidong Huang, Xinglin Yao</i>	
Development of a Multi-Channel Soil Macronutrient Detection System Using Ion-Selective Electrode	5910
<i>Linan Zhang, Miao Zhang, Mingya Sheng</i>	
Feasibility Study of an All-solid-state ISE Using Quaternary Ammonium Compounds for Soil Nitrate-Nitrogen Fast Determination	5921
<i>Miao Zhang, Maohua Wang, Simon S. Ang, Gang Liu</i>	
Multi-objective Optimization of Crop Planting Structure in Irrigation Area Based on Remote Sensing Technology	5933
<i>Chunjuan Zhang, Zhitao Zhang, Junying Chen, Yubin Lan</i>	
An Error Control Model for Farmland Wireless Sensor Networks	5944
<i>Zhou Quan, Deqin Xiao, Jiuhan Li</i>	
A Preliminary Study of A NIR Spectral Database for Rapid and Noninvasive Detection for Fruits	5952
<i>Wanhui Zhou, Lijuan Xie, Yibin Ying</i>	
The Effect of Audible Sound on the Germination and Growth of Mung Bean	5959
<i>Weiming Cai, Huinong He, Peifeng Liu, Songming Zhu</i>	
Hydraulic Calculation of Light and Small Sprinkling Unit Using Numerical Simulation.....	5971
<i>Xing-Ye Zhu, Shou-Qi Yuan, Jun-Ping Liu</i>	
Design of Automatic Control System for Greenhouse Fertigation	5982
<i>Zhiyu Zuo, Hanping Mao, Xiaodong Zhang, Wenyue Huang, Xianping Guan, Yunhui Hu</i>	
Multi-Spectral Images Estimation Models for Detection of Rape Nitrogen Contents	5990
<i>Xiaodong Zhang, Hanping Mao, Zhiyu Zuo, Xianping Guan, Jiheng Ni</i>	
Communication Protocol in Chassis Detecting Wireless Transmission System based on WIFI	5998
<i>Jidu He, Yongjun Zheng, Chengtao Zhang, Yu Tan, Yubin Lan, Shumao Wang</i>	
Combine Harvester Monitor System Based on Wireless Sensor Network.....	6008
<i>Yanxin Yin, Yongjun Zheng, Chengtao Zhang, Yu Tan, Yubin Lan, Shumao Wang</i>	
An Ontology-based Collaborative Service Framework for Agricultural Information----A Case Study in Mountain Areas in Central China	6017
<i>Yongjun Zheng, Sainan Yang, Yingyi Chen, Yubin Lan, Dandan Li, Yu Tan</i>	
Acquisition of Complete Surface Information of Apples Under On-line Condition	6032
<i>Bei Zhu, Xiuqin Rao</i>	
Application of VIS/NIR Hyperspectral Imaging for Predicting Beef Tenderness	6043
<i>Xiaoyu Tian, Xiuying Tang, Yang Xu, Yankun Peng, Shibang Ma</i>	
Design and Computational Fluid Dynamics Simulation of Triple-pass Rotary Drum Dryer for Wood Sawdust Drying	6055
<i>Yang Gao, Decheng Wang, Guanghui Wang, Jie Yang</i>	
Analysis of Some Performance Parameters of ZH1125 Diesel Engine.....	6071
<i>Yang Gao, Decheng Wang, Jie Yang, Guanghui Wang, Zongwen Wang</i>	

The Dynamic Simulation of Hydraulic Lifting Device of Seeder Based on ADAMS.....	6077
<i>Yang Gao, Decheng Wang, Jie Yang, Guanghui Wang, Liyan Peng</i>	
Model Establishing and Analyzing of Energy Consumption in the Process of Aquatic Feed Extrusion	6088
<i>Jie Yang, Hongying Wang, Lixia Song, Yang Gao, Erte Wei</i>	
Application of IoT Technology in Greenhouse Management.....	6099
<i>Li Li, Man Zhang, Minzan Li, Nick Sigrimis, Ahileas Anastasiou, Maohua Wang</i>	
The Bioenergy Farm Project: Web Applications for The Assessment Of Biomass Production And Logistics	6113
<i>Remigio Berruto, Patrizia Busato, Bochris Dionysis</i>	
Fast Pyrolysis Bio-oil Upgrading Over Noble Metal Catalysts	6125
<i>Zhongyi Ma, Lin Wei, Wangda Qu, James Julson</i>	
Hyperspectral Imaging for Detecting Water Stress in Potatoes	6134
<i>Suraj Amatya, Manoj Karkee, Ashok K. Alva, Peter Larbi, Bikram Adhikari</i>	
Developing Radio Frequency Treatment Protocol for Disinfesting Coffee Beans	6149
<i>L. Pan, S. Jiao, S. Wang, L. Gautz, T. Kang</i>	
Using Visible/Near Infrared Spectroscopy To Assess Soluble Solids Content of Grapes On A Moving Conveyor	6158
<i>Peter N. Schaare, V. Andrew McGlone, Richard J. Oliver, Christopher J. Clark</i>	
Moisture On-line Prediction System of Dryer Based on Neural Networks.....	6167
<i>Jie Yang, Hongying Wang, Erte Wei, Yang Gao, Lixia Song</i>	
The Effect of Ploughing Depth and Speed on the Fuel Consumption of some Commonly Used Farm Tractors in Selected States of South-Western Nigeria.....	6178
<i>E. A. Ajav, A. O. Adewoyin</i>	
Health Status of US Farmers and Ranchers: Using NHANES (1999-2004) to Determine Disability and Chronic Incidence of Disease.....	6191
<i>Cristina D. Miller, Danielle S. Rhen, Dawn Marie Clay, Robert A. Aherin</i>	
Assessing Level of Compliance with Selected OSHA Grain Handling Standards Requirements on a Convenient Sample of Exempt Farms	6206
<i>Pamela S. O'Conner, William E. Field, Gail Debey</i>	
Enhancing Worksite Mobility for Farmers and Ranchers with Physical Disabilities	6224
<i>R. W. Sturbridge, W. E. Field</i>	
The Effectiveness of the WiiFit as an Intervention to Prevent the Risk of Lower Back Injuries.....	6241
<i>Simeon Harbert, Linda Harley, Tushar Jaiswal, Tyler Vaughn, Jay Zuerndorfer</i>	
Challenges to Agricultural Energy Project Implementation	6251
<i>Robert Scott Frazier</i>	
Digital Capacitance Sensor for Grain Moisture Content Measurement.....	6266
<i>Zhihuang Liu, Ning Wang, Yongbo Wan</i>	
Author Index	