**2020 Winners**

**PhD Category**

1st Place
Xinge Xi, University of Arkansas, A Portable Biosensing Device with Magnetic Separation and Quantum Dot Bead Labeling for Simple, Rapid, and Quantitative Detection of Salmonella *Typhimurium*

2nd Place
Suzanne Leonard, Iowa State University, *Static and Dynamic Space Usage of Late Gestation Sows*

3rd Place
Afef Marzougui, Washington State University, *Elastic Net and Convolutional Neural Network for Evaluating Aphanomyces Root Rot Severity in Lentil*

**MS Winner**

1st Place
Garret Steinbeck, Ohio State University, *Development and Implementation of a Framework for the Calibration of the DNDC Model Using an Inverse Modeling Approach to Quantify Nutrient Leaching and Greenhouse Gas Emissions from Agricultural Systems*

**2019 Winners**

**PhD Category**

1st Place
Isaac Rukundo, University of Nebraska-Lincoln, *Use of a Handheld Near Infrared Spectrometer and Partial Least Squares Regression to Quantify Metanil Yellow Adulteration in Turmeric Powder*

2nd Place
Femeena Pandara Valappil, Purdue University, *An Improved Process-Based Representation of Stream Solute Transport in SWAT Model*

3rd Place
Aishwarya Mahadevan, Texas A&M University, *An Improved Glycerol Biosensor with an Au-Fe-NAD-Glycerol-Dehydrogenase Anode*

**MS Category**

1st Place
Baljeet Kaur, University of Guelph, *Water Security Assessment of Grand River Watershed in South-Western Ontario, Canada*

2nd Place
Laljeet Sangha, Auburn University, *An Innovative Approach to Rainwater Harvesting for Irrigation Based on ENSO Forecasts*

3rd Place
Dideolu Daniel, Louisiana State University, *Sulfur Contamination Inhibits Depolymerization of Kraft Lignin*

2018 Winners
PhD Category
1st Place
Ryan Kalinoski, University of Kentucky, *Hydrogels Derived from Lignocellulosic Compounds: Evaluation of the Compositional, Structural, Mechanical and Antimicrobial Properties*

2nd Place
Wenqi Li, University of Kentucky, *Performance of Lignin-Derived Activated Carbons for Supercapicitors: Effect of the Structure and Composition of Lignin Precursors*

3rd Place
Meetpal Singh Kukal, University of Nebraska - Lincoln, *Climate-Driven Crop Yield Variability and Climate Change Impacts on the U.S. Great Plains Agricultural Production*

MS Category
1st Place
Kapil Khanal, Washington State University, *Raspberry Primocaned Bundling and Taping Mechanisms*

2nd Place
Kritika Malhotra, Auburn University, *Sediment Fingerprinting to Identify Sources of In-Stream Sediment in an Urbanized Watershed*

3rd Place
Sunho Park, Chonnam National University, *Development of Eggshell Membrane-Based Nanoengineered Platforms*

2017
PhD Category
1st Place
Joe Sagues, University of Florida, *Production of Phenolic Monomers and Free Sugars from Sweet Sorghum Bagasse via Fenton Modification and Supercritical Ethanol*

2nd Place
Abhisesh Silwal, Washington State University, *Design, Integration, and Field Evaluation of a Robotic Apple Harvester*
3rd Place
Nuwan K. Wijewardane, University of Nebraska - Lincoln, *An Integrated VNIR Penetrometer System for High Resolution Vertical Soil Sensing*

**MS Category**

1st Place
Ryan McGehee, Auburn University, *Benchmarking Reliable Erosion Indices from Quarter-hour Station Data for Climate Studies in the Southeastern United States*

2nd Place
Katlyn DeVoe, Iowa State University, *Commissioning of a Segmented Wand for Evaluating Airflow Performance of Fans in Livestock and Poultry Housing*

3rd Place
Chongyuan Zhang, Washington State University, *Development of Automated High-Throughput Phenotyping System of Controlled Environment Studies*

2016

**PhD Category**

1st Place
Kevin Moore, Oklahoma State University
*Grain Entrapment Pressure on the Torso – Can you Breathe While Buried in Grain*

2nd Place
Suraj Amatya, Washington State University
*Detection of Cherry Tree Branches for Automated Sweet-Cherry Harvesting*

3rd Place
Rajendra Sishodia, University of Florida
*Effects and Management of Future Irrigation Withdrawals in a Semi-Arid South Indian Watershed*

**MS Category**

1st Place
Devin Mangus, Kansas State University
*Development of High Speed Camera Hardware and Software Package to Evaluate Real-Time Electric Seed Meter Accuracy of a Variable Rate Planter*

2nd Place
Bjorn Sellner, South Dakota State University
*Evaluating Filter Materials for Phosphate Adsorption from Agricultural Subsurface Drainage*

3rd Place
Whitney Lisenbee, Oklahoma State University
Comparison of Field Jet Erosion Tests and WEPP-Predicted Erodibility Parameters for Varying Land Cover

2015
PhD Category
1st Place
Hongchao Zhang, Washington State University
Quality Changes in High Barrier Polymeric Packages – A Shelf-Life Study for Microwave Assisted

2nd Place
Jessica Slutsky, The Ohio State University
Analysis of Natural Rubber Latex This Films

3rd Place
Vivek Sharma, University of Nebraska
Impact of Scale/Resolution on SEBS-Derived Evapotranspiration from Landsat and Modis Images

MS Category
1st Place
Nathan Holt, University of Florida
Transforming Plasticulture Systems through Futuristic Bed Geometry Design: The Next Frontier of Environmental and Economic Assisted Sustainability

2nd Place
Rui Xu, University of Georgia
Development of the Second Generation Berry Impact Recording Device to Measure Mechanical Damage on Berry Fruit Packing Lines

3rd Place
Devon Mangus, Kansas State University
Deploying a Thermal Infrared Imaging System for High Spatial and Temporal Resolution Crop Water Stress Monitoring of Corn Within a Greenhouse

2014
PhD Category
1st Place
Fuqing Xu, Ohio State University
A Mass Diffusion-Based Interpretation of the Effect of Total Solids Content on Solid-State Anaerobic Digestion of Cellulosic Biomass

2nd Place
Krishnamoorthy Pitchai, University of Nebraska
Simulation of Microwave Heating of a Frozen Heterogeneous Meal Rotating on a Turntable
3rd Place
Jingjin Zhang, Washington State University
*Mapping Interception of Photosynthetically Active Radiation in Sweet Cherry Orchards*

**MS Category**

1st Place
Kristin Perano, Cornell University
*Mitigating Heat Stress in Dairy Cattle via Conductive Cooling*

2nd Place
Wan-Ting Chen, University of Illinois
*Hydrothermal Liquefaction of Mixed-culture Algal Biomass from Wastewater Treatment System into Bio-crude Oil*

3rd Place
Cynthuja Partheeban, South Dakota State University
*Demonstrating the Nitrogen-removal Effectiveness of Denitrifying Bioreactors for Improved Drainage Water Management in South Dakota*

2013

**PhD Category**

1st Place
Liangcheng Yang, University of Illinois-Champaign
*Moisture Effects on Gas-Phase Biofilter Ammonia Removal Efficiency, Nitrous Oxide Generation and Microbial Communities*

2nd Place
Abdul-Sahib Al-Madhachi, Oklahoma State University
*A Mechanistic Detachment Rate Model to Predict Soil Erodibility Due to Fluvial and Seepage Forces*

3rd Place
Hongjian Lin, University of Minnesota
*Modeling Single-Chamber Microbial Fuel Cells Based on Freter Equations*

**MS Category**

1st Place
Tharun Kumar Konduru, University of Georgia
*Development of Metal Oxide Semiconductor Based Customized Gas Sensor Array for Onion Post harvest Disease Detection*

2nd Place
Rachel Felice, Oklahoma State University
*Laboratory Soil Piping and Internal Erosion Experiments: Evaluation of a Deterministic Soil Piping Model*

3rd Place
Gurdeep Singh, University of Arkansas
*A Novel Simulation Approach for Biofuel Crop Production on Marginal Lands*
2012
MS Category
1st Place
Taber Midgley, Oklahoma State University
Streambank Erosion and Instability Induced By Seepage: In-Situ Constant Head Seepage Experiments
2nd Place
Di Hu, North Carolina State University
Temporal and Spatial Variations of Bioaerosol Concentrations Emitted From an Egg Production Farm in Southeast U.S.
3rd Place
Manqing Ying, North Carolina State University
Measurements and Visualization of the Fluid Field of the Plume from an Animal Housing Ventilation Fan
PhD Category
1st Place
Laura Hill, Texas A&M University
Development of Beta-Cyclodextrin Inclusion Complexes Containing Essential Oils (Trans-Cinnamaldehyde, Eugenol, Cinnamon Bark and Clove Bud Extracts) Singly and in Combination for Antimicrobial Delivery Applications
2nd Place
Abdul-Sahib Al-Madhachi, Oklahoma State University
Deriving Parameters of a Fundamental Detachment Model for Cohesive Soils from Flume and Jet Erosion Tests
3rd Place
Ziyu Wang, North Carolina State University
Alkaline Pretreatment of Genetically-Engineered Switchgrass for Improved Carbohydrates Conversion Efficiency

2011
M.S. Category
1st
Taber Midgley - Oklahoma State University
Evaluation of the Bank Stability and Toe Erosion Model (BSTEM) for Predicting Lateral Streambank Retreat on Ozark Streams

2nd
Weilin Wang - University of Georgia
Shortwave Infrared Hyperspectral Imaging for Detecting Sour Skin (Burkholderia Cepacia) Infected Onions

3rd
Pengcheng Yu - University of Georgia
Quantitative Evaluation of a Blueberry Mechanical Harvester Using a Miniature Instrumented Sphere

PhD Category
1st
Xuan Li - University of California-Davis
*Three Dimensional Geometric Modeling of Processing-Tomatoes*

2nd
Derek Heeren - Oklahoma State University
*Stage-Dependent Storage of Phosphorus in Alluvial Floodplains*

3rd
Rabin Bhattarai - University of Illinois-Urbana
*Development of a Process-Based Model to Understand Fate and Transport of Cryptosporidium Parvum in the Environment*

**2010**

**M.S. Category**

<table>
<thead>
<tr>
<th>Place</th>
<th>Recipient, School and Project</th>
</tr>
</thead>
</table>
| 1st   | Haibo Huang – University of Arkansas  
"Magnetic Nanoparticles Based Magnetophoresis for Efficient Separation of Foodborne Pathogens"  
Xiguang Chen – University of California - Davis  
"Anaerobic Digestion of Food Wastes for Biogas Energy Production"
| 2nd   | Tao Lin – University of Illinois - Urbana  
"Engineering Economic Analysis for the Subtainability of Quick Germ/Quick Fiber Modified Dry Grind Ethanol Fractionation Process"
| 3rd   | 

**PhD Category**

<table>
<thead>
<tr>
<th>Place</th>
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</table>
| 1st   | Shawn E. Rosenquist – Virginia Tech  
"Facilitated Iron Reduction as a Means of Rejuvenating Phosphorus Removal Performance of Filtration Substrates "
| 2nd   | Sunil K. Mathanker – Oklahoma State University  
"Local Adaptive Thresholding of Pecan X-ray Images: Reverse Water Flow Method"
| 3rd   | Haiyan Cen – Michigan State University  
"Optimization of the Hyperspectral Imaging–Based Spatially-Resolved System for Measuring the Optical Properties of Biological Materials"

**2009**

**M.S. Category**

<table>
<thead>
<tr>
<th>Place</th>
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</table>
| 1st   | Ziyu Wang – North Carolina State University  
"Lime Pretreatment of Coastal Bermudagrass for Bioethanol Production"  
Akanksha V. Kanitkar – Louisiana State University  
"Batch type Microwave – Assisted Extraction (MAE) of Oil from Soybeans and Rice Bran"
| 2nd   | 


Fahimeh Yazdanpanah – University of British Columbia
3rd "Effect of Moisture Content and Fines on the Static Pressure Drop in Beds of Wood Pellets"

**PhD Category**

<table>
<thead>
<tr>
<th>Place</th>
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<tbody>
<tr>
<td>1st</td>
<td>Deepak R. Keshwani – North Carolina State University</td>
</tr>
<tr>
<td></td>
<td>&quot;Microwave Pretreatment of Switchgrass for Bioethanol Production&quot;</td>
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<tr>
<td>2nd</td>
<td>Librada Chu-Agor – Oklahoma State University</td>
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<tr>
<td></td>
<td>&quot;Sediment Transport Function Predicting Seepage Erosion Undercutting&quot;</td>
</tr>
<tr>
<td>3rd</td>
<td>Zifei Liu – North Carolina State University</td>
</tr>
<tr>
<td></td>
<td>&quot;Modeling Ammonia Emissions from Broiler Litter at Laboratory Scale&quot;</td>
</tr>
</tbody>
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**2008**

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<tbody>
<tr>
<td>1st</td>
<td>John W. Fuchs – Oklahoma State University</td>
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<tr>
<td></td>
<td>&quot;Subsurface Transport of Phosphorus in Riparian Floodplains: Tracer and Phosphorus Transport Experiments&quot;</td>
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<td>Ryan W. Woolbright – Oklahoma State University</td>
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<td></td>
<td>&quot;Model Study of RC Stepped Spillways with Sloped Converging Training Walls&quot;</td>
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<tr>
<td>2nd</td>
<td>Chetan Maringanti – Purdue University</td>
</tr>
<tr>
<td>3rd</td>
<td>&quot;Development of a Multi-Objective Optimization Tool for the Selection and Placement of BMP’s for Pesticide Control&quot;</td>
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<tr>
<td>1st</td>
<td>Mark A. Thomas – Purdue University</td>
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<tr>
<td></td>
<td>&quot;Water Quality Impacts of Corn Production to Meet Biofuel Demands&quot;</td>
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<tr>
<td>2nd</td>
<td>Nalladurai Kaliyan – University of Minnesota</td>
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<tr>
<td></td>
<td>&quot;Roll Press Briquetting and Pelleting of Corn Stover and Switchgrass&quot;</td>
</tr>
<tr>
<td>3rd</td>
<td>Kaushlendra Singh – University of Georgia</td>
</tr>
<tr>
<td></td>
<td>&quot;Screening and Pyrolysis of Poultry Litter&quot;</td>
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</table>

**2007**

**M.S. Category**

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<tr>
<td>1st</td>
<td>Yulin Lu, Purdue University</td>
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<tr>
<td></td>
<td>&quot;Biomimetic Catalysis for Hemcellulose Hydrolysis in Corn Stover&quot;</td>
</tr>
<tr>
<td>2nd</td>
<td>Laura E. Christianson, Kansas State University</td>
</tr>
<tr>
<td></td>
<td>&quot;Management Implications for a Poplar Phytoremediation Plantation&quot;</td>
</tr>
</tbody>
</table>
Matthew F. Digman, University of Wisconsin
3rd "Real-Time Moisture Measurement on a Forage Harvester using Near Infrared Reflectance Spectroscopy"

**PhD Category**

**Place** **Recipient, School and Project**

1st Maria Librada Chu-Agor, Oklahoma State University  
"Numerical Modeling of Bank Instability by Seepage Erosion"

2nd Kaushlendra Singh, University of Georgia  
"Effect of Factionation on Fuel Properties of Poultry Litter"

3rd Vykndeshwari Ganesan, South Dakota State University  
"Flow Properties of DDGS with Varying Soluble and Moisture Contents Using Jenike Shear Testing"

**2006**

**M.S. Category**

**Place** **Recipient, School and Project**

1st Jessica L. Kozarek, Virginia Tech  
Sorption of Estrogen to Three Agricultural Soils from Virginia, USA"

Bernard Cardenas-Laihacar, University of Florida  
"Rain Sensor Performance and Potential Irrigation Water Savings"

2nd Deisy Y. Corredor, Kansas State University

3rd "Effect of Decorticating Sorghum on Ethanol Production and Composition of DDGS"

**PhD Category**

**Place** **Recipient, School and Project**

1st Kyeonghwan Lee, Kansas State University  
"A Dielectric Permittivity Sensor for Simultaneous Measurement of Multiple Soil Properties"

2nd Jianwei Qin, Michigan State University  
"Measurement of the Optical Properties of Apples Using Hyperspectral Diffuse Reflectance Imaging"

3rd Dawn M. Reinhold, Georgia Institute of Technology  
"Phytoremediation of Fluorinated Pollutants by Duckweed"

**2005**

**M.S. Category**

**Place** **Recipient, School and Project**

1st Rachel N. Cook, Iowa State University
"Effects of Cage Stocking Density on Feeding Behaviors of Group-Housed Laying Hens"

**PhD Category**

**Place**  **Recipient, School and Project**

1st  Wenqiao Yuan, University of Illinois  
"Computational Modeling of NOx Emissions from Biodiesel Combustions Based on Accurate Fuel Properties"

2nd  Ganesh C. Bora, Kansas State University  
"Pulse Width Modulation (PWM) Technique in Precision Anhydrous Ammonia Application and its Valve Durability"

3rd  Pedro Andrade-Sanchez, University of California - Davis  
"Development Construction and Field Evaluation of a Soil Compaction Profile Sensor"

**2004**

**M.S. Category**

**Place**  **Recipient, School and Project**

1st  Angela R. Green, University of Kentucky, "Measurement of Horse Core Body Temperature" (MS Word file).

2nd  Michelle I. Soupir, Virginia Tech, "Release and Transport of Nutrients and Bacteria from Livestock Manure Applied to Pastureland" (Word document).

3rd  Hong Young Jeon, University of Tennessee, "Sprayer Boom Dynamic Effects on Application Uniformity" (Word).

**PhD Category**

**Place**  **Recipient, School and Project**

1st  Zhongchao Tan, University of Illinois, "Mechanisms of Particle Separation in Aerodynamic Air Cleaning" (Word).

2nd  Lingjuan Wang, Texas A&M University, "Correcting PM10 Over-Sampling Problem for Agricultural Dust" (PDF document).