

Boyd-Scott Graduate Research Award Winners Since 2004

2023 Winners

PhD Category

1st Place: Magni Hussain, Pennsylvania State University
Green Fruit Removal Dynamics for Development of Robotic Green Fruit Thinning End-Effector

2nd Place: Suraiya Akter, North Carolina State University
Broilers' Heat and Moisture Production Under Air Velocity Treatments in Summer Condition

3rd Place: Piyush Patil, North Carolina State University
Simulating Lagoon Sludge Drying in Solar-Assisted Greenhouse Drying System

MS Category

1st Place: Carly Graves, North Carolina State University
Evaluating Acidified Miscanthus Biochar as a Broiler Litter Amendment for Ammonia Control

2nd Place: Heather White, Kansas State University
Modeling the Potential Influence of Subsurface Tile Drainage Systems on Downstream Flooding in a Midwestern Agricultural Watershed

3rd Place: Rashmi Sahu, Pennsylvania State University
Apple Flower Bud Detection for Robotic Bud Thinning Using Deep Learning Neural Networks

2022 Winners

PhD Category

1st Place: Takhellambam Bijoychandra Singh, Auburn University
Temporal Disaggregation of Hourly Precipitation Under Changing Climate Over the Southeastern United States

2nd Place: Md Sultan Mahmud, Pennsylvania State University
Development of an Automatic Airflow Control System for Precision Sprayers Based on Tree Canopy Density

3rd Place: Worasit Sangjan, Washington State University
Optimization of a UAV-based Imaging and Image Processing (Orthomosaic and point Cloud) Approaches for Estimating Biomass in Forage Crop

MS Category

None for 2022

2021 Winners

PhD Category

1st Place

Guoming Li, Iowa State University, *Development and Optimization of a Deep-Learning-Based Egg Collecting Robot*

2nd Place

Tasmin Hossain, North Carolina State University, *The Nth-Plant Scenario for Blended Feedstock Conversion and Preprocessing Nationwide: Biorefineries and Depots*

3rd Place

Nitesh Kasera, North Carolina State University, *Effect of Surface Modification by Nitrogen-Containing Chemicals on Morphology and Surface Characteristics of N-doped Pine Bark Biochars*

MS Category

1st Place

Kushal KC, Ohio State University, *Assessment of the Spatial and Temporal Patterns of Cover Cropping Practices in the Western Lake Erie Basin*

2nd Place

Jacqueline Welles, North Carolina State University, *Lagoon Logistics; Flood Vulnerability Assessment of Eastern NC Industrial Swine Operations*

3rd Place

Suman Budhathoki, Auburn University, *Using X-Ray Computed Tomography to Quantify Variability in Soil Macropore Characteristics in Pastures*

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 Supercapacitors: 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 Thin 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-Madhhachi, 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

Place Recipient, School and Project

1st Haibo Huang – University of Arkansas

"Magnetic Nanoparticles Based Magnetophoresis for Efficient Separation of

- Foodborne Pathogens"
 Xiguang Chen – University of California - Davis
- 2nd "Anaerobic Digestion of Food Wastes for Biogas Energy Production "
- Tao Lin – University of Illinois - Urbana
- 3rd "Engineering Economic Analysis for the Substainability of Quick Germ/Quick Fiber Modified Dry Grind Ethanol Fractionation Process"

PhD Category

Place Recipient, School and Project

- 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

Place Recipient, School and Project

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

PhD Category

Place Recipient, School and Project

- 1st Deepak R. Keshwani – North Carolina State University
 "Microwave Pretreatment of Switchgrass for Bioehanol Production"
- 2nd Librada Chu-Agor – Oklahoma State University
 "Sediment Transport Function Predicting Seepage Erosion Undercutting"
- 3rd Zifei Liu – North Carolina State University
 "Modeling Ammonia Emissions from Broiler Litter at Laboratory Scale"

2008

M.S. Category

Place Recipient, School and Project

- 1st John W. Fuchs – Oklahoma State University
"Subsurface Transport of Phosphorus in Riparian Floodplains: Tracer and Phosphorus Transport Experiments"
- 2nd Ryan W. Woolbright – Oklahoma State University
"Model Study of RC Stepped Spillways with Sloped Converging Training Walls"
- 3rd Chetan Maringanti – Purdue University
"Development of a Multi-Objective Optimization Tool for the Selection and Placement of BMP's for Pesticide Control"

PhD Category

Place Recipient, School and Project

- 1st Mark A. Thomas – Purdue University
"Water Quality Impacts of Corn Production to Meet Biofuel Demands"
- 2nd Nalladurai Kaliyan – University of Minnesota
"Roll Press Briquetting and Pelleting of Corn Stover and Switchgrass"
- 3rd Kaushlendra Singh – University of Georgia
"Screening and Pyrolysis of Poultry Litter"

2007

M.S. Category

Place Recipient, School and Project

- 1st Yulin Lu, Purdue University
"Biomimetic Catalysis for Hemcellulose Hydrolysis in Corn Stover"
- 2nd Laura E. Christianson, Kansas State University
"Management Implications for a Poplar Phytoremediation Plantation"
- 3rd Matthew F. Digman, University of Wisconsin
"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 Vyknadeshwari 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-Lailhacar, 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).