

*Final Report of the  
16<sup>th</sup> Biennial Research Symposium*

**April 9 – 13, 2011  
Atlanta, Georgia**



**1890 Research:  
Sustainable Solutions for Current and  
Emerging Issues**

# ASSOCIATION OF 1890 RESEARCH DIRECTORS

## 2011 RESEARCH SYMPOSIUM

### *Greetings from the Chair*



The Association of Research Directors, Inc. (ARD) is the official representative body of the agricultural research administrators of the eighteen 1890 Land Grant Universities. In its role in supporting and enhancing 1890 research in the food and agricultural sciences, the ARD has held conferences for the sharing of knowledge since 1976. The 16<sup>th</sup> Biennial Research Symposium, with support, participation and conscientious and excellent work of many from the 1890 universities, lived up to lofty expectations. The theme of the 2011 Symposium was “1890 Research: Sustainable Solutions for Current and Emerging Issues” and the goal of this endeavor was “To provide a forum for interactions, knowledge sharing, building networks for expanded partnerships and showcasing the talents and achievements of the 1890 community.” As you will realize by reading this report, this conference showcased the research achievements of both students and scientists. We are overwhelmingly grateful to those of you who participated and provided financial support, those who made excellent poster and oral presentations in the food and agricultural sciences, and those who gave talks/remarks at the general sessions. The judges of the student presentations and the moderators for the oral presentations were outstanding and we owe them heartfelt thanks. We also congratulate those who were recognized for outstanding achievements, both through professional endeavors and those who were award winners in the paper and poster presentation competitions.

The details of putting on such a massive endeavor were handled magnificently by the Symposium Steering Committee and associated subcommittees, the Technology and Communications Committee, and the Registration Committee and all of these individuals are gratefully acknowledged in this report. The Research Directors provided excellent leadership and involvement and are commended for their efforts in advancing excellent research, academic and outreach programs at respective 1890 institutions. As has been said consistently by Chairs of the ARD who have come before me, on behalf of the ARD, I am proud of the excellence demonstrated at the member institutions.

As you read excerpts on the following pages from the Strategic Plan of the Association of 1890 Research Directors, Inc., it will be evident that the 16<sup>th</sup> Biennial Research Symposium met many of the goals and commitments of this organization and thus, is an endeavor that we will continue to undertake with great pride and enthusiasm. Please visit the ARD website to review the symposium-related documents and power point presentations. Already we have begun planning the 2013 Symposium, and updates about the planning progress will be provided at [www.umes.edu/ard](http://www.umes.edu/ard).



Sincerely,

A handwritten signature in blue ink that reads "Dyremple Marsh".

Dyremple Marsh, ARD Chair

## ABOUT THE ARD: EXCERPTS FROM THE ARD STRATEGIC PLAN

Over the past century, the food, agricultural science and natural resource research programs, curricula, and cooperative extension programs at the 1890 Universities have evolved into complex and specialized programs of advanced science and technology. Today we espouse the philosophy of *building opportunities for all citizens to take advantage of the rich diversity of society and to tackle the challenges and opportunities of a technologically advanced world, while contributing to the common good of all people.*

The ARD is integrally involved in creating a society where all people have opportunities for wholesome living and learning through responsible pursuits of their goals and aspirations. To accomplish this, the food and agricultural research mission of the ARD is to: *Provide visionary and enlightened leadership to member institutions as they continuously address issues impacting their ability to accomplish the food and agricultural research challenges facing the state, nation and world-at-large.*

Primary attention is given to a broad-based research agenda and institutions' capabilities in targeted areas that address the needs of all people in society but in particular, those who are under-represented and economically disadvantaged. The ARD is committed to:

- Innovative research programs that provide effective and efficient solutions to quality of life problems affecting individuals, families and communities
- Development of society-ready graduates who are uniquely trained and in demand to tackle the diverse issues impacting the nation and the world
- Enhancement of the socioeconomic condition of individuals, families and communities in targeted regions
- Service as regional and national leaders in addressing the needs and challenges facing rural and urban communities as well as limited resource farmers.

Today the 1890 campuses are bristling with diverse, quality research programs that are problem-driven and interdisciplinary in nature. The basic and applied research programs involve individual and joint collaboration of member institutions at the local, state, national, and international levels and are increasingly multi-institutional, multi-state and stakeholder driven. Designed to support medium and small-sized farms and businesses focused on maintaining the natural resources, as well as targeted rural and urban communities, the 1890 Universities' primary areas of research concentration include:

- Improved nutrition and health of urban and rural populations with emphasis on obesity
- Economically competitive and sustainable small-scale agricultural systems
- Crop diversity and alternative crops and marketing strategies for farmers
- Food safety and improved nutritional quality
- Bio-based energy production
- Value-added plant and animal products
- Natural resource management and sustainability



**Ribbon Cutting Ceremony and Opening of Exhibit Hall (below)  
Dr. Dyremple Marsh, Dr. Portia Holmes Shields, (TSU President) and Dr. Orlando McMeans**



**Opening Session: Dr. George Cooper (SCSU Pres.), Dr. Ed Knipling (ARS Administrator), Dr. Harry Williams (DSU Pres.), Dr. Marsh, Mr. Gary Black (GA Commissioner of Ag.), Dr. Larry Rivers (FVSU Pres.), Dr. McMeans**



**Plenary Session: Dr. Walter Hill (Tuskegee Dean/Director), Dr. Roger Beachy (NIFA Director), Dr. Sanjiv Singh (Carnegie Mellon Professor)**

# *Presentations*

There were 523 presentations made at the 16<sup>th</sup> Biennial Research Symposium. The tables below give the presentation breakdowns by categories and by presenters.

## Total Presentations, Oral and Poster:

Oral Presentations	254
Poster Presentations	269
Total # of Presentations	523



## Oral Papers Presented:

		<i>Totals</i>
Oral Papers Presented by Undergraduate Students	53	
Oral Papers Presented by Graduate Students	73	
Oral Papers Presented by Students		126
Oral Papers Presented by Scientists	128	
Oral Papers Presented		254

## Poster Presentations:

		<i>Totals</i>
Posters Presented by Undergraduates	82	
Posters Presented by Graduates	71	
Posters Presented by Students		153
Posters Presented by Scientists	116	
Posters Presented		269

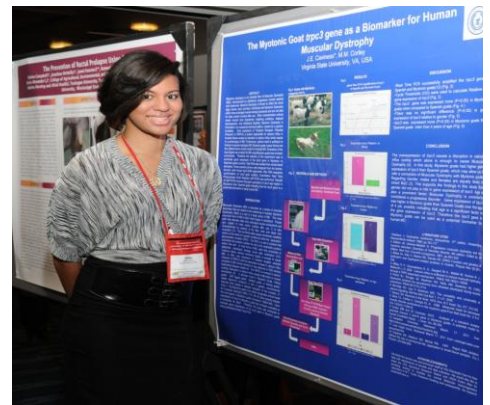
## Oral and Poster Papers Presented by Category:

	Undergraduate Students	Graduate Students	Scientists	Total Papers Presented
<b>Food Safety and Global Food Security</b>	10 oral	17 oral	23 oral	102
	13 poster	18 poster	21 poster	
<b>Renewable Resources, Bioenergy &amp; Environmental Stewardship</b>	8 oral	21 oral	30 oral	120
	19 poster	20 poster	22 poster	
<b>Sustainable Plant and Animal Production Systems</b>	19 oral	21 oral	41 oral	178
	33 poster	15 poster	49 poster	
<b>Human Health, Nutrition, and Obesity Prevention</b>	4 oral	9 oral	14 oral	72
	14 poster	16 poster	15 poster	
<b>Family, Youth, Community and Economic Development</b>	12 oral	5 oral	20 oral	51
	3 poster	2 poster	9 poster	

Tennessee State University (TSU) President, Dr. Portia Holmes with TSU students. (below)



Fort Valley State University (FVSU) Dr. Larry Rivers with FVSU students. (below)



# Symposium Attendance Summary

## ATTENDEES

<b>16<sup>th</sup> Biennial Research Symposium</b>	
<b>Total # of Registered Participants</b>	<b>785</b>
Alabama A&M University	43
Alcorn State University	45
Delaware State University	41
Florida A&M University	74
Fort Valley State University	56
Kentucky State University	31
Langston University	9
Lincoln University	42
North Carolina A&T State University	62
Prairie View A&M University	53
South Carolina State University	57
Southern University	45
Tennessee State University	29
Tuskegee University	47
University of Arkansas Pine Bluff	45
University of Maryland Eastern Shore	24
Virginia State University	28
West Virginia State University	33
<b>Total from 1890s</b>	<b>764</b>
<b>Total # of Students</b>	<b>301</b>
<b>Total # of other Attendees</b>	<b>21</b>
# of Non-1890 Exhibits	5
# representing 1862s	5
# of sponsors	5
Federal agencies represented	5



# Exhibits

Virginia State University



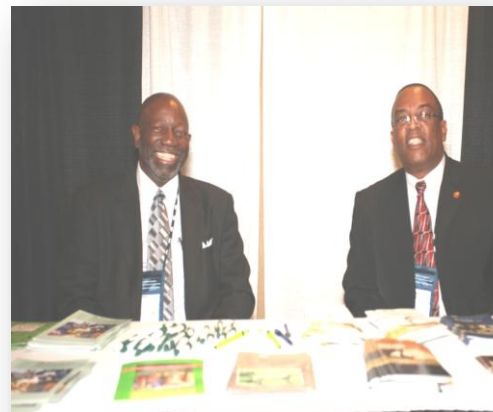
Prairie View A&M University



Southern University and A&M College



APHIS



Fort Valley State University





# *Awards and Recognitions*



**First, Second and Third Place Award Recipients for Poster and Oral Paper Competition**

## **AWARDS/RECOGNITIONS**

ARD is committed to recognizing and rewarding excellence. At every symposium, outstanding oral and poster presentations have been recognized. The paper presentation competition at the 2011 Symposium was among students only. Three special awards were presented to individuals demonstrating dedicated service to the ARD and the 1890 Universities and one researcher was recognized for her leadership and scholarship on a multi-state collaboration. The Morrison-Evans Outstanding Scientist Award, the most prestigious ARD award for research, was also presented.

## Competitive Paper Awards in *Food Safety and Global Food Security* Category

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### **Graduate Student Oral Presentations:**

**1<sup>st</sup> Place – K. Walker.** Effects of Lime Juice, Lime Oil, Citric Acid, Sodium Citrate, and Sodium Chloride on Reduction of *Salmonella typhimurium* – Prairie View A&M University

**2<sup>nd</sup> Place – S. Dzimianski.** Effects of Alfalfa, Rhizoma Peanut and *Sericea lespedeza* Chopped Hays on Milk Production and Composition in Lactating Dairy Does – Fort Valley State University

**3<sup>rd</sup> Place – W. Long III.** Efficacy of Ozone Washers in Reducing Natural and Inoculated Microorganisms on Tomatoes and Scallions – Virginia State University

### **Undergraduate Student Oral Presentations:**

**1<sup>st</sup> Place – S.M. South.** Effects of Mineral Nutrients on the Concentration of Oleic and Linoleic Acids in Peanuts. – Prairie View A&M University

**2<sup>nd</sup> Place – S. Alaway.** Determining Food Use Pattern of *Lasioderma serricorne* [L.] Using Trace Metal Analysis - South Carolina State University

**3<sup>rd</sup> Place – F.G. Lutz.** Syntenic Analysis of Cucurbit Cultivar Complex Using Fruit Specific EST Microsatellite Markers – West Virginia State University

### **Graduate Student Poster Presentations:**

**1<sup>st</sup> Place – C.M. Kersey.** The Magnesium, Cobalt, Nickel Transporter, CorA Affects Exoenzyme Production and Virulence in the Soft Rot Pathogen, *Pectobacterium carotovorum* – Tennessee State University

**2<sup>nd</sup> Place - S. Wheeler.** Molecular Characterization and Pathogenicity of Fungal Isolates for Use against the Small Hive Beetle, *Aethina tumida*, a Destructive Pest of Honey Bee - Florida A&M University

### **Undergraduate Student Poster Presentations:**

**1<sup>st</sup> Place – D.A. Elder.** Formation of Hydroxymethylfurfural in Oil-in-Water Emulsions Containing Hydrolyzed Milk Proteins: Effect of Buffer Type and Concentration – Prairie View A&M University

**2<sup>nd</sup> Place – H. Ibidapo.** Evaluation of Lipolysis in Commercial Cow Milk Yogurt Compared with Goat Milk Counterparts during Refrigerated Storage – Fort Valley State University

## Competitive Paper Awards in the *Renewable Resources, Bioenergy and Environmental Stewardship* Category

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### **Graduate Student Oral Presentations:**

**1<sup>st</sup> Place – B.A.Reckenbeil.** Oyster Gardening: Where in Delaware's Inland Bays to Focus Shoreline Oyster (*Crassostrea virginica*) Rehabilitation Efforts? – Delaware State University

**2<sup>nd</sup> Place – M.A. Schutte.** Natural Succession: Examining Vegetative Composition and Structure Progression on Restored Agricultural Land – Delaware State University

**3<sup>rd</sup> Place (tie)– J. Pyles.** Arsenic Availability and Iron Redox Status in Soil – Lincoln University

**3<sup>rd</sup> Place (tie) – N.K. Yadav.** Fast Growing *Paulownia elongate* Tree as a Potential Lignocellulosic Bioenergy Crop for the Southern U.S. – Fort Valley State University

### **Undergraduate Student Oral Presentations:**

**1<sup>st</sup> Place – C. Jones.** A Study on How Lichens Affect the Atmospheric Pollution of Metals along Interstate Highway I-26 in the Midland and Low Country of South Carolina – South Carolina State University

**2<sup>nd</sup> Place – A. Draper.** The Fiber Comparison of Lyocell, Rayon, and Cotton – Delaware State University

**3<sup>rd</sup> Place – F.W. Turner.** Soil Amendments Modified Capsaicin Content of Hot Pepper Fruits – Kentucky State University

***Graduate Student Poster Presentations:***

**1<sup>st</sup> Place – A. Devudigari.** Evaluation of Chlorophyll Meter Use in Sweet Sorghum Crop Yield and Leaf Nitrogen Estimation – North Carolina A&T State University

**2<sup>nd</sup> Place – L.D. Reid.** *Chenopodium (Chenopodium ambrosioides)* Extracts for the Suppression of Congograss (*Imperata cylindrical* L.) – Florida A&M University

**3<sup>rd</sup> Place – M. Farley.** Identification of Swine Feces-Specific *Faecalibacterium* Phylogenetic Types – Lincoln University

***Undergraduate Student Poster Presentations:***

**1<sup>st</sup> Place - J. Madison.** Influence of Fermentation Times on Ethanol [EtOH] Production from Eleven Sweetpotato Cultivars – Tuskegee University

**2<sup>nd</sup> Place – K. Hibbert.** Synthesis of Water Dispersible Carbon Nanotubes as Silica Hybrids – Prairie View A&M University

**3<sup>rd</sup> Place – M. Terry.** The Measurement of Terrestrial Radioisotopes in Soil Samples – South Carolina State University

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**Competitive Paper Awards in the Sustainable Plant and Animal  
Production Systems Category**

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***Graduate Student Oral Presentations:***

**1<sup>st</sup> Place –X. Henry.** Using Variable Rate Seeding to Maximize Corn Yield and Profit on a Field with Management Zones – University of Maryland Eastern Shore

**2<sup>nd</sup> Place – C. Lyle.** Cloning of a Soybean Sodium-Proton Antiporter and its Role in Abiotic Stress Tolerance – Virginia State University

**3<sup>rd</sup> Place – J.B. Botkins.** Genetic Diversity and Geographic Differentiation in Pawpaw Populations from Six States as Revealed by DNA Markers – Kentucky State University

***Undergraduate Student Oral Presentations:***

**1<sup>st</sup> Place – S.I. Smith.** Bone Morphogenetic Protein 6 Expression and Function in Ovarian Granulosa Cells in Laying Hens – North Carolina State University

**2<sup>nd</sup> Place – C. Johnson.** HB-EGF Expression is Modulated by Progesterone and Estrogen in RL95-2 Cells – Prairie View A&M University

**3<sup>rd</sup> Place – T.G. Vehige.** Developing a Mass-Trapping System for Sustainable Management of Cucumber Beetles – Lincoln University

***Graduate Student Poster Presentations:***

**1<sup>st</sup> Place – G. Kelley.** Identification of Key Proteins Associated with Fat Accretion in Broiler Chickens Using a Proteomics Approach – Tennessee State University

**2<sup>nd</sup> Place – J. C. Warren.** Use of Goats for Controlling Invasive Weeds in New Castle County, Delaware – Delaware State University

**3<sup>rd</sup> Place – M.C. Gooden.** Effect of Garlic and Papaya Seed on Fecal Egg Counts in Sheep and Goats – University of Maryland Eastern Shore

### ***Undergraduate Student Poster Presentations:***

**1<sup>st</sup> Place – M.J. Singer.** Utilizing Mushrooms to Enhance Health and Performance of Broiler Chickens in Pasture Production – North Carolina A&T State University

**2<sup>nd</sup> Place – S.D. Szabo.** Effect of Shipping Environment and Extender Composition on Motility of Liquid-Stored Ram Semen – Virginia State University

**3<sup>rd</sup> Place - J. Streeter.** Parity Effects on Reproductive Efficiency in Purebred Large White Sows (*Sus scrofa*) – Tuskegee University

## **Competitive Paper Awards in Human Health, Nutrition and Obesity Prevention Category**

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### ***Graduate Student Oral Presentations:***

**1<sup>st</sup> Place – L. Shackelford.** Chemopreventive Potential of Coffee and Cocoa against Azoxymethane Induced Aberrant Crypt Foci in a Rat Model – Alabama A&M University

**2<sup>nd</sup> Place – S. Samuels.** Transgenic Sweetpotato Expressing Synthetic Lytic Peptide Genes as a Plant Based Treatment against HIV Replication – Tuskegee University

**3<sup>rd</sup> Place - B. Richardson.** Conservation Strategies for a Rare Anti-Tumor Plant, *Scutellaria ocmulge* Small – Fort Valley State University

### ***Undergraduate Student Oral Presentations:***

**1<sup>st</sup> Place – A. Lee.** An Effect of Three Months Refrigeration Storage on Free Fatty Acid Compositions of Low-Fat and Full-Fat Goat Milk Cheeses – Fort Valley State University

**2<sup>nd</sup> Place – I. Smith.** Polyphenol Profiles of Different Parts of Grape Pomace and Impacts of Drying Methods – North Carolina A&T State University

**3<sup>rd</sup> Place – W.D. Rollyson.** Effects of *Hibiscus sabdariffa* Extracts and Compounds on Tumor and Vascular Smooth Muscle Cells – West Virginia State University

### ***Graduate Student Poster Presentations:***

**1<sup>st</sup> Place – J.D. Kelly.** Establishing Physicochemical Profiles for High Nutrient Dense Purslane Pasta – Tuskegee University

**2<sup>nd</sup> Place – A. Moore.** Dairy Consumption: A Potential Risk Factor for Prostrate Cancer – Prairie View A&M University

**3<sup>rd</sup> Place – L. Mounts.** Reduction of Azoxymethane-Induced Colon Tumors in Fisher 344 Male Rats Using Processed Dry Beans – Alabama A&M University

### ***Undergraduate Student Poster Presentations:***

**1<sup>st</sup> Place - J. Hull.** Effect of Processing on Chemopreventive Potential of Grapes and Beets in Azoxymethane-Induced Fisher 344 Male Rats – Alabama A&M University

**2<sup>nd</sup> Place – D. Freeman.** Efficacy of Anti-Inflammatory Synthetic Peptides in a Murine Fungal Infection: IL10 Deficient Mice – Tuskegee University

**3<sup>rd</sup> Place – I. Smith.** Free Radical Scavenging Capacity of Polyphenol Extracts from Different Parts of Grape Pomace – North Carolina A&T State University

## Competitive Paper Awards in Family, Youth, Community and Economic Development Category

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### ***Graduate Student Oral Presentations:***

**1<sup>st</sup> Place – S. Pasirayi.** Assessment of Risk and Risk Reducing Strategies of Small Farm Operators in Tennessee – Tennessee State University

**2<sup>nd</sup> Place – P. Surathkal.** Recent Trends in Marketing of Aquaculture Products in the United States: Results from Store-Level Scanner Data Analysis – University of Arkansas at Pine Bluff

### ***Undergraduate Student Oral Presentations:***

**1<sup>st</sup> Place – L.A. Collins.** An Empirical Analysis of Factors Influencing Students' Nutritional Awareness, Food Label Use, and Perceptions of Health Status – Southern University

**2<sup>nd</sup> Place – A. Frederick.** Impact of Irrigation Practices on Water Quality of Two Community Gardens in Nashville, Tennessee – Tennessee State University

**3<sup>rd</sup> Place - C. Myles.** Will Consumers Pay More for “Georgia-Grown” Tomatoes? Evidence from the Georgia National Fair – Fort Valley State University

### ***Graduate Poster Presentations:***

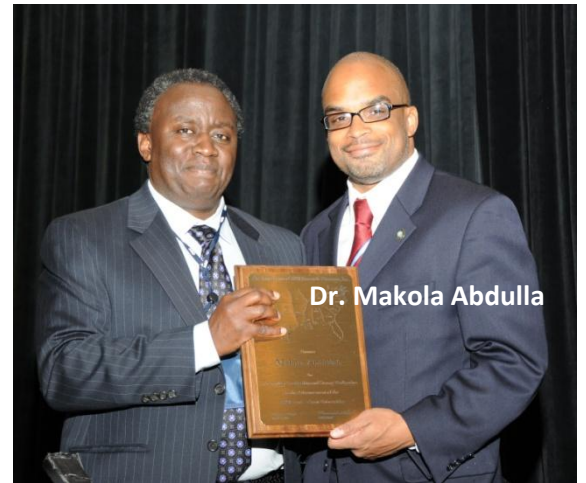
**1<sup>st</sup> Place – D. Phillip.** Performance in Animal Science Proficiency Test is Related to Student Class Standing, Farm or Non-farm Background – Tuskegee University

### ***Undergraduate Poster Presentations:***

**1<sup>st</sup> Place – R. Harris.** The Persistence of Poverty in Forest County, Mississippi – Alcorn State University

# *Special Awards*

The ARD recognized three of its own for distinguished service to the ARD and to the 1890 Land Grant Universities. These honorees are Dr. Makola Abdullah, who is now Provost at Florida Memorial University, Dr. Alfred L. Parks, Jr. who is now a Professor at Prairie View A&M University and Dr. Alton Thompson, who is now Provost at Delaware State University. Also honored was Dr. Anugrah Shaw for the ESCOP regional “Excellence in Multistate Research Award.”



## ***Morrison-Evans Outstanding Scientist Award***

The Morrison-Evans Outstanding Scientist Award is named in honor of Dr. Richard D. Morrison, President Emeritus, Alabama A&M University and Congressman Frank E. Evans of Colorado. Dr. Morrison and Rep. Evans provided leadership in garnering research and extension funds for the 1890 Land Grant Universities. This award is the highest honor given to an 1890 Scientist by the Association of 1890 Research Directors, Inc. and carries a cash stipend of \$1000.



### ***Dr. Gulnihal Ozbay, recipient of the 2011 Morrison-Evans Outstanding Scientist Award***

The 2011 Morrison-Evans Outstanding Scientist Award was presented to Dr. Gulnihal Ozbay, a Research Associate Professor at Delaware State University. Dr. Ozbay received her BS degree in fisheries and aquaculture from the University of Ondokuzmayis, in Turkey, her MS from the University of Maine in bio-resource engineering, and her PhD from Auburn University in fisheries and aquaculture. She has secured 43 research and teaching grants totaling ~\$8.5 million which allowed her to establish the “Algal and mariculture research laboratory, a flow cytometry and water quality laboratory, and most recently she established a Seafood Inspection laboratory. Most of her projects relate to shellfish-algal dynamics as they relate to aquaculture systems, toxicity in harmful algae, and nutrient management.

Although the recipient has only been at her home institution for 8 years, already she has served as the advisor for 13 graduate students, served on the committees of 13 others, and supervised and mentored over 40 undergraduate students on their research projects. She has presented at 12 international conferences, more than 30 national/regional conferences, and has been an invited guest speaker on 30 occasions. Her students have presented over 130 times and when these presentations were competitive, they have won 16 first place awards. She has received numerous awards for excellence, several of which were national awards. She has served on numerous government agency proposal review panels and served as a manuscript reviewer or on editorial boards for journals and book chapters. She promotes local produce and aquaculture products, and focuses on sustainable fishing efforts. Through a global seminar program she addresses water quality, aquaculture and environmental issues with 10 international institutions. She has been an Embassy Fellow and a Borlaug Fellow.

## *Symposium Leadership*

The success of the 2011 Symposium is attributed to the dedication, competence and hard work of the **Steering Committee Members** who are listed below:

Orlando McMeans (Steering Committee Chair),  
West Virginia State University  
Dyremple Marsh (ARD Chair), Delaware State  
University  
Makola Abdullah, Florida A&M University  
Robert Barney, West Virginia State University  
Conrad Bonsi, Tuskegee University  
Carolyn Brooks, Association of Research Directors  
Carter Catlin, Jr., Tennessee State University  
James Garner, University of Arkansas at Pine Bluff  
Beverly Green, Tuskegee University  
Fred Harrison, Fort Valley State University (retired)  
James Hill, Southern Region SARE  
Lisa Hopkins, Delaware State University  
Shirley Hyman-Parker, North Carolina A&T State  
University  
Moses Kairo, Florida A&M University

Govind Kannan, Fort Valley State University  
Vernon Jones, Langston University  
L. Washington Lyons, Association of Extension  
Administrators  
Donald McDowell, North Carolina A&T State  
University  
Kirkland Mellad, Southern University and A&M  
College  
Steven Meredith, Lincoln University  
Willie Rawls, Southern University and A&M College  
Gladys G. Shelton, University of Maryland Eastern  
Shore  
J. Ulises Toledo, West Virginia State University  
Bridget Udoh, Southern University and A&M College  
Lisa Williamson, West Virginia State University  
Terrence Wolfork, Fort Valley State University

### **Technology and Communications Committee:**

William Augustine, Southern Univ. and A&M College  
Michael Bratcher, North Carolina A&T State Univ.  
Laurie Gengenbach, North Carolina A&T State Univ.  
Marian Gibbons, Florida A&M University  
Marquinta Gonzalez, Fort Valley State University  
Rodney James, South Carolina State University  
Paul Johnson, Prairie View A&M University  
Christi Landry, Prairie View A&M University

Ayana McPhail, Fort Valley State University  
Lalit Rainey, North Carolina A&T State University  
Jason Robinson, West Virginia State University  
Chris Rogers, Southern Univ. and A&M College  
LaRachelle Smith, Prairie View A&M University  
James Williams, North Carolina A&T State Univ.  
Terrence Wolfork (Chair), Fort Valley State Univ.

Webmaster: Torrey A. Brown, University of Maryland Eastern Shore

### **Abstract Committee:**

Robert Barney (Chair), West Virginia State University  
Carolyn B. Brooks, Association of 1890 Research Directors  
Ed Buckner, University of Arkansas at Pine Bluff  
Carter Catlin, Jr., Tennessee State University  
Frieda Eivazi, Lincoln University  
James Garner, University of Arkansas at Pine Bluff  
Shirley Hyman-Parker, North Carolina A&T State University  
L. Washington Lyons, Association of Extension Administrators  
Lurline Marsh, University of Maryland Eastern Shore  
Donald McDowell, North Carolina A&T State University  
Steven Meredith, Lincoln University  
Willie Rawls, Southern University and A&M College  
J. Ulises Toledo, West Virginia State University  
Bridget Udoh, Southern University and A&M College



*Members of the Association of 1890 Research Directors, Incorporated*



***Support, responsiveness and financial assistance were substantially provided from the members of the ARD to contribute to the success of the symposium.***



Volunteers were essential to the success of the symposium, i.e. judges for the student oral and poster paper competitions and moderators for the oral presentation sessions. The following National Program Leaders at NIFA performed the difficult task of evaluating the nomination packages submitted by the campuses for the Morrison-Evans Outstanding Scientist Award:

***Caroline Crocoll, Fen Hunt, Mervalin Morant, Mary Anne Rozum, Steve I. Smith***

***USDA Agency Sponsors and 1862 University Exhibitors***

The National Institute of Agriculture (NIFA)

The Agricultural Research Service (ARS)

The Animal & Plant Health Inspection Service (APHIS)

Southern Region Sustainable Agriculture Research & Education - (SARE)

Southern Region Station of the U.S. Forest Service (FS)

University of Georgia

University of Illinois

North Carolina State University

Grateful acknowledgement is extended to presenters from ARS, SARE, APHIS, USDA/FAS, EPA and Higher Education for Development (HED)

The ARD is extremely grateful to NIFA for the financial support provided through a NIFA-AFRI Conference Grant (AFRI-Food Safety).