A NOTE FROM THE VICE PRESIDENT
Dear friends,

2014 was a year of celebrating accomplishments and looking forward to an exciting future for the Division of Agriculture, Forestry, and Veterinary Medicine at Mississippi State University.

In February, Congress passed, and the President signed into law, the Agricultural Act of 2014, commonly called the Farm Bill. Several of our agricultural economists advised members of Congress on recommendations for the bill. Others have developed tools for producers to use and delivered educational workshops to help them understand the implications of this legislation.

We marked two centennials this year in the division. The Department of Agricultural Economics held a banquet to commemorate 100 years of educational accomplishments. The Extension Service held events across the state to celebrate the signing of the Smith-Lever Act in 1914, which officially created the national Cooperative Extension Service. In early May, a delegation of stakeholder representatives joined MSU administrators at the national convocation in Washington, D.C.

During the spring, personnel from the division responded in several counties to the aftermath of the tornado outbreak. Ten teams from DAFVM units converged on Winston County to assess agricultural property damage and establish “safe spaces” at shelters in Louisville. Our county Extension staff in the Tupelo/Lee County area helped coordinate the efforts of volunteers over an extended recovery period after the storms. Our personnel were the “boots on the ground” needed to deal with the devastation.

In early April, we were fortunate to receive funding increases from the Mississippi Legislature ranging from 5 to 5.5 percent for the units in our division. Our faculty and staff set a new record by securing $66 million in grants and contracts. These continued investments from diverse sources, and our continued investment in agricultural science research, caused us to move up in the rankings to sixth of more than 700 public and private institutions for research and development expenditures, as noted in the National Science Foundation’s Higher Education Research and Development Survey.

This commitment to cutting-edge research impacts our student population. Fall 2014 enrollment numbers broke all previous division records. Overall division enrollment was 3,203, with 2,207 in the College of Agriculture and Life Sciences, 528 in the College of Forest Resources, and 468 in the College of Veterinary Medicine. Over the past five years, the three colleges in our division have witnessed amazing enrollment growth, with CALS increasing almost 42 percent, CFR rising 25 percent, and CVM climbing more than 24 percent.

As our student population grows, so does our need for facilities. The $12.2 million necropsy laboratory renovation at the Wise Center was completed in August. Also at the Wise Center, a new $3.8 million classroom building is under construction and should be ready for use by June 2015. Designs are being finalized for a new $7.7 million meat science and muscle biology laboratory that will be built near the Wise Center.

MSU has a legacy of dedicated staff, faculty, and administrators who serve selflessly and with tremendous vision. I was pleased to represent the division at the dedication of the J. Charles Lee Agricultural and Biological Engineering Building, named in honor of MSU’s 17th president. Dr. Lee is known for his commitment to the land-grant university mission and fostering academic, research, and outreach excellence. In late November, we dedicated the Brown Loam Branch Experiment Station in Hinds County to E.G. “Gene” Morrison, who worked for MSU for more than 40 years and served as the station superintendent for 33 years.

Thank you for all you do to ensure our continued excellence.

Gregory A. Bohach
The College of Agriculture and Life Sciences (CALS) embraces the three pillars of the land-grant institution: teaching, service, and research. With 16 majors and 47 concentrations, students can find a home in CALS while they prepare for their careers. The college has an exceptional student body, world-renowned faculty, and outstanding support from alumni and friends.

CALS is proud to honor its past while keeping keenly focused on the future. This year, the agricultural and biological engineering building was dedicated to former MSU president Charles Lee. Lee’s vision had tremendous impact on CALS and the university as a whole, and the building pays homage to his legacy. Looking ahead, CALS established an environmental science and agricultural systems major in the Department of Plant and Soil Sciences and a concentration in fruit and vegetable production for horticulture majors.

CALS also awarded its first master’s in human development and family studies. The School of Human Sciences launched the master’s program in human development and family studies in the fall of 2012 and the doctoral program in 2013.

This year, the college welcomed Jeff Dean as the new department head of biochemistry, molecular biology, entomology, and plant pathology. The previous head, Scott Willard, is serving as CALS associate dean.

Exciting CALS programs include the new 2+2 agreement in poultry science with Jones County Junior College and the MSU Cotton Summit. This event is just one result of MSU’s participation in Cotton University, a consortium of professionals and educational institutions advocating increased understanding of the cotton textile industry.

Service is a priority for many CALS students, and some of those students focus on improving food security. This year, CALS students worked as international interns with the Food and Agriculture Organization of the United Nations, studying irrigation in Malawi and assessing childhood obesity in Chile, among other tasks.

CALS students have always been challenged to excel academically, and today CALS undergraduates are completing more research than ever before. A new CALS initiative is turning students into investigators through the Undergraduate Research Scholars Program. Fourteen undergraduate students participated in the program this year and presented their research at scientific conferences. CALS students continue to win poster and oral presentation competitions and earn scholarships. For example, a team of landscape architecture students recently placed second nationally in the EPA Rainworks competition.

Clearly, the College of Agricultural and Life Sciences is making an impact on the future of agriculture with award-winning students, challenging academic experiences, and internationally renowned faculty.
The Mississippi Agricultural and Forestry Experiment Station (MAFES) operates laboratories at 16 locations across Mississippi. These stations represent all soil types, topographies, climates, and plant and animal production systems found in Mississippi. Research encompasses plant production systems, animal production systems, food safety and quality, sustainable energy, human health and well-being, and sustainable communities.

MAFES scientists use the latest technology and research in nitrogen management, weed control, herbicide drift analysis, and plant population studies to develop management recommendations so producers can improve yield, productivity, and profit while protecting the environment.

MAFES research enhances animal production systems, including aquaculture. Scientists received a provisional patent on the development of a vaccine and vaccine delivery system to protect catfish from the bacteria that cause enteric septicemia, a disease that often kills Mississippi catfish. In research trials, vaccinated catfish had a relative percent survival rate above 90 percent and were 20 percent larger than unvaccinated fish.

MAFES scientists focused on food safety and quality developed a test kit that detects salmonella, which causes 1.4 million food poisonings in the U.S. annually. Scientists received a provisional patent and are ready to implement it in a commercial setting.

MAFES researchers strive to provide solutions to prevent disease, injury, and disability. Scientists conducted research on woodpecker beaks to discover more about their shock-absorbing capabilities. Insight from the study could help researchers apply biological principles to improve the shock absorption of certain manmade products, such as football helmets, and research results contributed to a patented idea.

MAFES scientists seek to help safeguard our environment by researching how to conserve water resources, reduce energy consumption, protect the fragile coastline, and restore threatened ecosystems. Through the Row-crop Irrigation Science and Extension Research (RISER) program and the Research and Education to Advance Conservation and Habitat (REACH) program, scientists reduce water quantity used in agriculture while improving quality.

As MAFES celebrates more than 125 years of service, a spirit of continuous improvement is prevalent throughout the organization. MAFES implemented a continuous improvement plan to enhance the MAFES Official Variety Trials—an annual, independent, scientifically based assessment of the genetic performance of several seed varieties. The plan included procedural protocols and communication initiatives. Additionally, MAFES began Operation Facelift, a multi-site, multi-year strategic plan to enhance facilities throughout the system.

MAFES scientists make a difference in the lives of Mississippians through meaningful discoveries that translate beyond the laboratory to fields, homes, and schools.
The College of Forest Resources, or CFR, offers the only four-year undergraduate degree programs in the state in forestry; wildlife, fisheries, and aquaculture; and natural resources and environmental conservation. Fall 2014 enrollment included 528 students: 381 undergraduates and 147 graduates.

The college includes three departments: Forestry; Wildlife, Fisheries, and Aquaculture; and Sustainable Bioproducts (formerly the Department of Forest Products). The name Sustainable Bioproducts better reflects the renewable, natural, and sustainable resources used in the industry.

A new major has been added this year in forestry to prepare students for emerging career fields. The natural resources and environmental conservation undergraduate major provides students with the knowledge to develop, apply, facilitate, and execute natural resource and environmental management plans. The major offers concentrations in resource conservation science, natural resource law and administration, and natural resource technology. Additionally, the online master's degree program in forestry continues to attract students from around the globe, and 33 students are currently enrolled.

CFR, with funding from the Forest and Wildlife Research Center, launched the Undergraduate Research Scholars Program in the fall of 2013. Seven undergraduate scholars participated: three in forestry and four in wildlife, fisheries, and aquaculture. Students performed exceptionally during this first year, winning awards at the MSU undergraduate research symposium and presenting their findings at professional conferences.

Students continue to excel in state, regional, and national competitions. For example, wildlife, fisheries, and aquaculture student Charles Parker placed first in the MSU's Office of Entrepreneurship and Technology Transfer Entrepreneurship Week. Parker won a $10,000 cash prize for his company Rod Sox, a manufacturer of fishing pole protectors.

The college also teaches the next generation of students through conservation camps and the Wood Magic Science Fair, among a host of other outreach activities. Six students who participated in summer camp are now enrolled in degree programs in the college.

The Bulldog Forest program continues to grow and add new properties, which provide living laboratories for students. The Bulldog Forest allows donors to give forest land to the university, which is then managed for revenue to fund student scholarships and provide faculty assistance.

Clearly, the CFR is home to talented faculty, exceptional students, and a supportive network of alumni and friends. CFR continues to grow and receive recognition as a college that teaches and practices sustainable conservation for future generations.
The Forest and Wildlife Research Center (FWRC) provides science-based research focused on sustaining and conserving the state’s forest, wildlife, fisheries, and water resources while using its abundant forest products. FWRC is the research arm of the College of Forest Resources and includes three departments: Forestry; Wildlife, Fisheries, and Aquaculture; and Sustainable Bioproducts.

To boost the economy and help forest landowners remain competitive, scientists in Sustainable Bioproducts search for new ways to improve the value of Southern forests. The research team evaluates strength and stiffness of Southern yellow pine lumber and evaluates wood properties that determine the value of dimensional lumber.

Forestry scientists also work to help foresters and landowners maintain bottomland hardwood forests. This year, scientists developed a software program that estimates the growth and yield of this valuable resource. The program is based on 33 years of research.

FWRC has joined a national effort to improve water quality in the Gulf of Mexico by helping forest and agricultural landowners adopt conservation practices that reduce nutrient transport. Excess nitrogen entering the Gulf of Mexico contributes to a “dead zone” caused by low oxygen in the water. The dead zone cannot sustain most marine life. A new forestry study has found that bottomland forest—in addition to providing critical habitat for waterfowl—also improves water quality by storing significant amounts of nitrogen, reducing the load that flows downstream.

FWRC scientists are committed to protecting and enhancing water quality and wildlife habitat throughout the region. For example, researchers recently evaluated the Migratory Bird Habitat Initiative, which began in response to the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. The initiative gave landowners financial incentives to establish waterfowl and wetland bird habitats on their lands. Study results indicate that waterbird use and food abundance in MBHI-enrolled rice fields, idled catfish ponds, and natural wetlands provided significant habitat benefits to waterfowl throughout the region.

Providing wildlife habitat is a priority, and finding solutions to conflicts arising between humans and wildlife is also important. FWRC established the Center for Resolving Human-Wildlife Conflicts to address these issues. Scientists are currently working to determine economic impacts of wild hog damage and develop methods to help landowners remove these invasive pests.

FWRC scientists continue to work to improve Mississippi’s economy, protect its natural resources, and enhance the quality of life of its citizens and visitors.
Whether they are researching diseases, improving food safety, caring for family pets, or protecting public health, veterinarians have a tremendous impact on our state, our region, our nation, and our world.

MSU-CVM students have real opportunities to be at the forefront of solving many global problems, curing diseases and developing new medical treatments for animals and humans, and contributing to the lives and health of animals. This year, a new study-abroad class led by Dr. Margaret Khaitsa, professor of epidemiology, addressed the challenges of rural veterinary practice in tropical climates and demonstrated the connections between human, animal, and environmental health. The course consisted of hands-on field work in Uganda with area professionals and veterinary students from Uganda, Kenya, Tanzania, Rwanda, and Ethiopia. Students saw the similarities between tropical veterinary medicine in Uganda and rural veterinary practice in many states in the U.S., including Mississippi. The course enables students to understand, appreciate, and experience tropical animal production food safety and public health. These are skills that will help them diagnose and eliminate transboundary animal diseases both at home and abroad before they become a threat to domestic agriculture and health.

Our faculty have made great strides in securing highly competitive federal grants to aid the industry and protect health in our region. An MSU-CVM research team led by Dr. Atilla Karsi received funding from the USDA National Institute of Food and Agriculture. This is the first time USDA NIFA has granted such funding through its newly established Aquaculture National Program. The goal of the funded research is to support the development of new science-based information and innovation to address current aquaculture issues. Our researchers will study new vaccine candidates for Edwardsiella ictaluri, one of the most important pathogens affecting the state’s channel catfish aquaculture industry.

Associate professor Dr. Henry Wan received a National Institutes of Health R01 grant to study pandemic influenza viruses and vaccine development. The R01 is the original and oldest grant mechanism used by NIH. NIH scores all R01 applications; Wan has achieved a perfect score, a very rare and difficult feat.

We are proud that our students and faculty are staying ahead of the curve as we approach changes in technology, trade, and even veterinary medicine. Throughout these changes, our primary goal remains making advancements in teaching, research, and community service.
The Smith-Lever Act made the Extension Service official in 1914, making this year our 100th anniversary. We celebrated both our founders and our future. From Seaman A. Knapp, “Corn Club” Smith, and Susie Powell to today’s Extension agents, specialists, leaders, and volunteers, we have a lot to be proud of.

More than 50 celebrations took place across Mississippi. Gov. Phil Bryant and many county boards of supervisors issued proclamations in honor of the centennial. County Extension offices across the state conducted workshops, open houses, and fairs. Likewise, we honored our history at the national Centennial Convocation in Washington, D.C.; at this year’s annual conference; and at the Extension Centennial Family Reunion, where we enjoyed the launch of Peach Melba, a new ice cream flavor created for us by the MSU Dairy.

A 5 percent budget increase from the state legislature restored previous reductions, allowed us to fill critical positions, and promoted exciting new initiatives. Thanks to strong leadership statewide, we remain committed to providing science-based information to all Mississippians, including those involved in the state’s $7.5 billion agriculture industry.

We continued to emphasize the importance of efficient irrigation practices at field days, turn-row talks, and farm visits. Our agents and specialists worked hard to help the state’s row-crop and other commodity producers maintain productivity and efficiency in the face of weather challenges and low commodity prices. From insect pests and herbicide-resistant weeds to emerging technologies, we bring MSU’s research to Mississippi’s growers.

A ribbon-cutting ceremony April 10 opened the Jimmy Bryan 4-H Youth Complex in West Point. This 63-acre complex houses a nature trail, a 4-H shooting range, the Southern Ionics 4-H Environmental Center, the Mississippi Farm Bureau 4-H ATV Training Center, and the Elizabeth A. Howard 4-H Therapeutic Riding and Activity Center.

In April, Extension personnel provided support in disaster assessment and recovery efforts after tornadoes hit several counties.

The Community Resource Development Pilot Program launched this year. Sixteen agents will work in selected county offices with citizen groups, civic organizations, economic development agencies, and government units to build stronger communities.

In response to the state’s need for science-based information about healthy living, we debuted a new video news release, “The Food Factor,” hosted by Family and Consumer Sciences agent Natasha Haynes. This weekly segment appears on “Farmweek,” several TV stations, and YouTube.

After such a successful year, we are eager to embark on the next 100 years of the MSU Extension Service.
ADMINISTRATION

MARK E. KEENUM

GREGORY A. BOHACH

KEENUM

President
Mississippi State University

BOHACH

Vice President
Agriculture, Forestry, and Veterinary Medicine
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<td>Kent C. Hoblet</td>
<td>Dean</td>
<td>College of Veterinary Medicine</td>
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<td>George H. Hopper</td>
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<td>Gary B. Jackson</td>
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$7.9 BILLION

2014 FARM GATE value of ag and forestry production
(includes government payments)

$17.2 BILLION

2014 VALUE ADDED to the Mississippi economy by ag and forestry

$102.8 MILLION

R&D expenditures by MSU in agricultural sciences

Mississippi ranked among the Top 20 States in the production of 15 agricultural commodities.

- Corn Yields 185 bushels/acre*
- Cotton Yields 1,183 lbs/acre
- Cotton Production 1,035,000 bales
- Soybean Yields 52 bushels/acre*
- Soybean Production 114 million bushels
- Rice Yields 7420 lbs/acre*
- Sweet Potato Production $96 million*
- Cattle & Calf Production $397 million*
- Broiler Production $2.88 billion*

* record level
Combines CVM, FWRC, MSU ES, and MAFES. Does not include CALS or CFR.

The terms ‘Other,’ ‘Restricted,’ and ‘Designated’ are accounting terms used to categorize fund types. ‘Restricted’ generally refers to externally sponsored funding, such as grants. ‘Designated’ includes funds designated for a special purpose. ‘Other’ describes funds not designated or restricted, such as sales and self-generated funds.
RESEARCH & EXTENSION CENTERS

1. North MS Research & Extension Center
   VERONA

2. Delta Research & Extension Center
   STONEVILLE

3. Frank T. (Butch) Withers Central MS Research & Extension Center
   RAYMOND

4. Coastal Research & Extension Center
   BILOXI

MAFES STATION UNITS & SUBUNITS

7. Northeast Mississippi Branch
   HOLIDAY SPRINGS

9. Delta Branch
   STONEVILLE

10. Coastal Plain Branch
    NEWTON

11. E.G. (Gene) Morrison Brown Loam Branch
    RAYMOND

12. Truck Crops Branch
    CRYSTAL SPRINGS

13. South Mississippi Branch
    PEPOLAR SPRINGS

14. Crosby Arboretum
    PICAUH

15. Seafood Processing Lab
    PASCAGOULA

16. Prairie Research Unit

17. Beaumont Unit

18. White Sand Research Unit

19. McNeill Unit

CVM DIAGNOSTIC LABS

20. Aquatic Research & Diagnostic Laboratory
    STONEVILLE

21. CVM-Diagnostic Laboratory Services
    MSU

22. Research & Diagnostic Lab/ Poultry Lab
    PEARL

BULLDOG FORESTS

23. Sharp Forest

24. Linda Johnson Legacy Forest

25. Phillips Memorial Forest


27. Brand Forest

28. John W. Starr Memorial Forest

29. Gober Forest

30. Leopold Legacy Forest

31. Shaw-O’Reilly Property

32. John & Jane Player Property

33. Col. K. D. Johnson Forest

34. Harris Forest

35. Norma Lea O’Quin Forest

36. Dunn Forest

Two additional forests are unidentified at the request of anonymous donors.

An MSU Extension Service office is located in each of the 82 counties.
We are an equal opportunity employer, and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law.