

# DEPARTMENT

*of Agricultural and Biological Engineering:*



Greg Word

## Materials and Systems

MAFES personnel in the Department of Agricultural and Biological Engineering are engaged in research in three major areas: biomedical engineering, environmental engineering, and precision agriculture and agricultural systems.

Scientists in the department are working with colleagues in the College of Veterinary Medicine, the University of Mississippi Medical Center and other departments at MSU on a variety of medical devices and materials. Projects under way in the department's Biomaterials and Tissue Engineering Lab include work with cell/biomaterials interaction, biocompatibility and corrosion resistance of metals for dental and orthopedic implants and the development of biodegradable scaffolds for cartilage tissue engineering.

Work under way in the environmental engineering area includes projects with animal waste management, sustainable design and ecological engineering, and optimization of chemical application in agriculture.

Current projects in the area of animal waste management include the use of kenaf plants as biofiltration media to reduce odor and wastewater in commercial swine facilities, runoff analysis of beef cattle grazing operations, the development and evaluation of best management practices for surface water management, and evaluation of effluent from catfish farming operations.

Sustainable design and ecological engineering work includes restoration of coastal beaches and the design and evaluation of mitigation wetlands.

In the areas of chemical application in agriculture, scientists in the department are evaluating the spray deposition and drift of agricultural chemicals.

Research in these areas is conducted in the department's Kimbrough Precision Agriculture and Remote Sensing Engineering Laboratory and the MAFES/ABE Mini-Gin.

Current projects include development of new yield monitors for cotton and sweet potatoes, kenaf processing, instrumentation for the automated inventory and in-pond assessment of catfish, and gasification of biomass for ethanol production.

The department's scientists also are working with soybean yield improvement through remote sensing, robots in agricultural production and management, improvement of cotton ginning operations, variable rate technology for agriculture, and spectrophotometric analysis of crop materials.



Marco Nicovitch



Fred Faulk

For more about research in the Department of Agricultural and Biological Engineering, visit [www.abe.msstate.edu](http://www.abe.msstate.edu).