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NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

## Understanding and Mitigating North Carolina's Food Deserts

**Greensboro, NC – July 1, 2019** – The existence of areas with low accessibility to healthy foods, known as food deserts, have been identified as a serious issue contributing to food insecurity in both urban and rural regions in the United States, especially in areas where minority populations reside. North Carolina is greatly affected by this issue, which is why integrated, interdisciplinary research is underway to examine and understand the multi-dimensional and complex problem.

A team of North Carolina researchers is one year in to their three and a half-year \$750,000 NSF *Dynamics of Coupled Natural and Human Systems* grant. The team is exploring factors that contribute to improving food accessibility, while maximizing agricultural production and minimizing negative environmental impacts on the land and water used in food production. The grant funds the modeling of linkages between biophysical processes and socio-economic factors, and how these impact agricultural production and food consumption patterns.

The complexity of North Carolina's food desert issue supports the complexity of this research team; five researchers in five departments across two HBCUs are bringing their data modeling expertise to bear on understanding and ultimately finding solutions to this problem.

Dr. Manoj Jha, an associate professor in the Department of Civil, Architectural and Environmental Engineering in the College of Engineering, is joined by co-PIs Dr. Chyi Lyi (Kathleen) Liang in the College of Agriculture and Environmental Sciences, Dr. Lyubov Kurkalova in the College of Business and Economics, Dr. Greg Monty in the College of Engineering and Dr. Leila Hashemi Beni in the College of Science and Technology. The team also includes Dr. Timothy Mulrooney, associate professor in the Department of Environmental, Earth and Geospatial Sciences at North Carolina Central University.

“North Carolina is an extremely productive state agriculturally,” explains Dr. Liang. “We are number one and two in the nation in so many crops and food animals, yet we have a disproportionate number of food deserts. Why does a state with such a bountiful supply of resources have challenges providing nutritious food to its citizens?”

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**North Carolina Agricultural and Technical State University** is the nation's largest historically black university. Classified a “higher research” university by the Carnegie Foundation, it is a land-grant member of the University of North Carolina System. A&T is known for its leadership in producing graduates in engineering, agriculture and other STEM fields. The university was founded in 1891 and is located in Greensboro, North Carolina.

The research team is focusing on three geographically-varied, food-challenged communities in North Carolina with changing demographic profiles. The study area includes the state's eastern coastal region represented by Bladen County, the piedmont region represented by Guilford County, and the western mountain region represented by Rutherford County.

Each regional testbed was selected to (a) verify methods of analysis for three distinct geographic, biophysical and socio-economic characteristics such as income, employment, household composition, education, and race and ethnicity, (b) test and validate the integrated modeling system developed during the project, and (c) compare and contrast food desert characteristics and sensitivity in different geographic areas.

In addition to involving faculty members across disciplines, the project includes educational experiences for underrepresented undergraduate as well as graduate students, further building research capacity. The project also involves engagement with stakeholders such as local and state planning agencies, extension agents, agricultural producers and food retailers. Having a broad, interdisciplinary team will contribute to the design, development and delivery of policy-relevant information for use at the state, county and city level, to support food security going forward.

Since 2001, the National Science Foundation has funded projects through its *Dynamics of Coupled Natural and Human Systems* (CNH) program that examine the complex interactions between human and natural systems. The CNH program considers humans and their environment as one interconnected system; the grants lead to new understanding of how people can best interact with the environment on a planet with limited, and often irreplaceable, resources.

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