

# **NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY**

## **SCHOOL OF AGRICULTURE AND ENVIRONMENTAL SCIENCES**

### **Center of Excellence for Post-Harvest Technologies**

*North Carolina Research Campus  
Kannapolis, North Carolina*

#### **What is Post-Harvest Technology?**

Post-harvest technology constitutes an inter-disciplinary science applied to agricultural commodities after harvest for the purpose of preservation, conservation, quality control/enhancement, processing, packaging, storage, distribution and marketing to meet the food and nutritional requirements of consumers. Post-harvest technology stimulates agricultural production, prevents post-harvest losses, improves nutrition and adds value to agricultural products thereby opening new marketing opportunities and generating new jobs while stimulating growth of other related economic sectors. The process of developing post-harvest technology requires an interdisciplinary and multidimensional research approach, which includes scientific creativity, technological innovation, commercial entrepreneurship and stakeholder inputs.

#### **What is the North Carolina Research Campus?**

The North Carolina Research Campus (NCRC), located in Kannapolis, N.C., is one of the most advanced nutrition-related biotechnology facilities of its type in the world. The \$1.5 billion complex is being built on a 350-acre campus, the site of the former Cannon Mills. The NCRC plans to combine the research power of the University of North Carolina system and Duke universities, cutting-edge training from the state's community colleges and the know-how of private enterprises to create an exceptional biotech hub. North Carolina ranks third in the nation behind California and Massachusetts in the \$30 billion a year field of biotechnology. As the NCRC develops, David H. Murdock, the Center's founder, hopes to raise North Carolina to number two with the addition of about 100 - 200 biotech companies and the creation of approximately 35,000 jobs.

#### **What role will N.C. A&T Play at NCRC?**

N.C. A&T will operate the Center of Excellence for Post-Harvest Technologies (COEPHT) at NCRC. The COEPHT's primary focus is to provide an infrastructure for multidisciplinary research programs for post harvest technology with focus on fruits and vegetables. COEPHT was established to play a lead role in using science to develop appropriate, need-based and cost-effective post harvest technology for North Carolina crops and to address related food sciences nutrition and health issues. These include processing and preservation, storage stability, safety and quality, composition, recovery and identification of bioactive compounds for health applications, product development, consumer research and value-added processing.

#### **COEPHT Objective**

The primary objective of the Center of Excellence for Post-Harvest Technologies is to create synergistic collaborations with other partners within the North Carolina Research Campus (NCRC) to enable breakthroughs in science that generate new knowledge which results in creating new jobs and improved quality of life for citizens in North Carolina, the nation and the world.

The Center of Excellence for Post-Harvest Technologies plans to become a premier center of excellence in post-harvest technology research through development of effective and cost-attractive post-harvest technologies for agricultural commodities, particularly fruits and vegetables. The Center will ensure adoption of research discoveries by end users to meet their needs in diverse areas of post-harvest technologies, including quality and nutritional value, value-added processing, food safety and economic aspects.



## COEPHT Major Focus Areas

### Research

COEPHT will foster interdisciplinary research in diverse post-harvest including:

- **Health-promoting food components from fruits and vegetables**  
Isolation and characterization of bio-active compounds  
Development and testing of functional foods
- **Food safety issues**  
Development of rapid and effective methods to control spoilage and pathogenic bacteria  
Safe minimal processing methods to inactivate pathogens and eliminate other contaminants
- **Storage stability related to shelf-life and quality**  
Development of new technologies for predicting and extending shelf-life and quality  
Evaluation/minimization of the effect of storage and processing conditions on nutrients and bioactive compounds
- **Value-added product development for food and non-food products**  
Development of new and value-added food and non-food uses

### Experiential Learning/Training

COEPHT will provide unique opportunities for experiential learning and training of young scientists on cutting-edge science and technologies for enhanced competitiveness in the job market. Students and professionals will have the opportunity to engage in applied research projects as part of their academic/professional training at N.C. A&T and acquire hands-on experiences in pertinent aspects of post-harvest technologies.

### Outreach

COEPHT will facilitate transfer of discoveries in post-harvest technologies to end users and actively seek science-based solutions to post-harvest issues facing growers, processors, distributors and consumers of agricultural commodities. To achieve this, COEPHT will provide:

#### **Seminars, short courses, and print materials**

Short courses, for the benefit of small scale fruit and vegetable processors and handlers, will include such topics as fruit beverages, fruit and vegetable processing, fruit and vegetable drying, control of physiological post-harvest quality deterioration, adequate storage (e.g., packaging, temperature control, insect control, etc), and other post-harvest factors affecting produce quality and safety (e.g., control of biological and chemical hazards).

#### **Consultancy, advisory, and contract research**

Technical assistance on specific post-harvest issues relating to any aspect of product development, process optimization of fruits and vegetables, food safety, quality assurance, and value-added processing will be available.

#### **Analytical and Diagnostic Services**

Diagnostics on post-harvest physiological quality deteriorations which may occur during harvesting, packaging, storage, transportation and distribution will be provided. In addition, analytical services such as nutritional content (including functional and bioactive components), proximate composition, elemental and trace element testing, microbiological and chemical safety tests, and other produce specific tests, including sulfur dioxide in dried fruits, color measurements, texture profile and textural characteristics, sugar profiles, titratable acidity, total soluble solids, pH, glycerol, ascorbic acid, water activity (aw), ethylene, oxygen, carbon dioxide, and maturity tests will be provided.

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