



Michael D. Boyette, PE

Michael D. Boyette, PE, ASABE Fellow, is the recipient of the 2023 Sukup Global Food Security award for practical application of Agricultural and Biological Engineering to the postharvest handling of sweetpotatoes for Global Food Security.

Boyette served as the Philip Morris Professor and Extension Specialist in the Department of Biological and Agricultural Engineering, North Carolina State University. His duties involved teaching, research, and extension activities on postharvest engineering of fresh produce. His academic focus was the practical application of heat and mass transfer for produce cooling and storage facilities, as well as use of automatic sensors and controls, long-term respiration studies, mechanical design, energy conservation, and quality assurance.

In the early 1990s, Boyette's research on sweetpotato storage led to the development of the technology of horizontal movement of air in closely stacked pallet bins. This negative horizontal ventilation (NHV) allowed for long-term maintenance of optimal temperature and humidity throughout individual rooms with more than one million pounds of sweetpotatoes. This development helped to propel sweetpotatoes from a regional, seasonal crop to a year-round staple. The ability to ship quality sweetpotatoes all year revolutionized the industry, boosted consumption, and built a vibrant export market for US sweetpotatoes. Today, more than 95% of sweetpotato storage in the US, which is estimated at 40 million bushels, employs NHV. To address the needs of low-resource agricultural regions around the world, Boyette and his research

team worked with numerous aid organizations, such as the International Potato Centers (CIP) in Africa, Asia, and South America, to design solar and wood-heated drying sheds that significantly reduce postharvest loss of sweetpotatoes.

A 38-year member of ASABE, Boyette has served on numerous committees as a member and leader. He was an associate editor in the Processing Systems Technical Community; branch advisor for the NCSU Student Branch and an International $\frac{1}{4}$ Scale Tractor Design Competition; and program chair of the ASABE North Carolina section. He is a member of the American Society for Engineering Education, and the Multistate Research Coordinating Committee and Information Exchange Group of SERA; past president of the international Sweet Potato Collaborators Group; and a founding member of the NCSU Academy of Outstanding Faculty engaged in Extension.

Boyette has authored over 100 peer reviewed journal articles and extension publications on postharvest handling and energy conservation. In 2017, he received the National Research Impact award from the Southern Association of Agricultural Scientists and a career achievement award from the North Carolina Sweetpotato Commission.