Alvin R. Womac, PE, professor, biosystems engineering, University of Tennessee, Knoxville, is being honored for discoveries and developments in equipment systems for spray application technology and biomass logistics systems.

Womac is a world-recognized researcher and leader in agricultural spraying and biomass logistics. Womac has made significant contributions to research in sprayer droplet sizing, nozzle classification, boom sprayer field performance, and aerial spray applications. Womac led a research team in spray equipment technology, developing novel equipment and monitoring techniques, resulting in the development of a unique variable-orifice nozzle. Womac was also part of research teams that investigated the safe application of pesticide sprays for minimal environmental impact and maximum targeting of product. Womac has conducted research in biomass, looking for efficient biomass processing and logistics systems. Biomass stems were discovered to fail efficiently by shear failure leading to the concept of "weakest mode of failure" for biomass grinding. This led to additional discoveries in high-tonnage bulk-format logistics systems that yielded a 10x advantage of reclaim and flowability of switchgrass harvested via shear-intensive forage harvesters compared to tub grinder size reduction. Biomass discoveries of particle size effect on compacting bulk-format biomass into self-unloading over-the-road ejector trailers completed the efficient delivery of pre-processed biomass feedstock into a biorefinery.

In his current role as a professor of biosystems engineering, Womac teaches courses in mechanical systems engineering, agricultural and construction equipment, and team-taught a unique biosystems engineering practicum course. Womac is also involved in coordinating ABET self-assessment processes.

A 34-year member of ASABE, Womac has served as a member and leader in many ASABE committees, including within the Machinery Systems Technical Community and Food Process committees. Womac was extensively involved as a leader and member of the ASABE Tennessee section. He is a longstanding member of the USDA Multi-state Research Committees on Science and Engineering for a Biobased Industry and Economy and the Feedstocks Engineering committee. He also maintains membership in the American Society of Mechanical Engineers, the Institute for Liquid Atomization and Spray Systems, and the USDA National Steering committee on Spray Drift.

Womac is author or coauthor of more than 80 peer-reviewed articles and holds two United States patents. Throughout his career, Womac has received numerous awards including many ASABE Superior Paper awards, Standards Development awards, and Outstanding Reviewer awards. He has also received a number of awards from the University of Tennessee including a Faculty Excellence award, Outstanding Faculty Performance award, and a Research Impact award.