Heping Zhu

Heping Zhu, ASABE Fellow, is the recipient of the 2023 Cyrus Hall McCormick Jerome Increase Case Gold Medal for inventing and commercializing intelligent precision spray technology resulting in reduced agrochemical use and enhanced protection of crops, workers, and the environment.

Zhu is an Agricultural Engineer and Lead Scientist for the USDA-ARS Application Technology Research Unit in Wooster, Ohio. He has over 30 years of research experience in developing innovative sustainable methodologies and technologies for precision pesticide applications. His technologies have revolutionized the standard spray equipment to significantly reduce agrochemical inputs to crops and the environment, reduce airborne spray drift and reduce spray lost to soil and water. They have been used to efficiently apply agrochemicals, teach classes, assess chemical contamination, design sprayers and nozzles, improve chemical formulations, control invasive plants, and achieve better crop quality and environment stewardship.

His most distinguished accomplishment was to lead multidisciplinary teams to invent a breakthrough intelligent spray technology to reduce agrochemical use by more than 50%. He also led transfer of this technology to Smart Apply to produce a commercial intelligent spray control system, which received the AE50 innovative product award, Davidson Prize and European SIMA Gold Medal. This technology has created numerous new jobs, reduced crop production costs, enhanced the capabilities of growers in protecting specialty crops economically while simultaneously safeguarding the environment and worker safety, and opened new areas for researchers and educators to develop advanced pest management programs. He was also one of the several earliest researchers to apply computational fluid dynamics computer programs for agricultural engineering research and developed user-friendly software to predict spray drift potentials. He led the discovery that 70% spray mixtures could be reduced in spray applications when droplet size, leaf morphology, and spray formulation were properly coordinated.

A 25-year member of ASABE, Zhu has been actively involved in ASABE services and chaired several committees. He is currently the Machinery Systems Community Editor for Journal of the ASABE and Applied Engineering in Agriculture, and has served as the Associate Editor and the reviewer for the two journals for many years.

He has authored or coauthored over 290 peer-reviewed journal articles, book chapters and other publications. Throughout his career, Zhu has received a number of prestigious awards including the National Federal Laboratory Consortium award for Excellence in Technology Transfer, and the USDA-ARS Midwest Area's Early-Career Scientist award, Senior Scientist award and 3 Technology Transfer awards.