

Dr. William 'Dick' Okie - 2018 Wilder Medal Recipient

Dr. William Okie, emeritus Horticulturist at the USDA-Agricultural Research Service, was awarded the 2018 Wilder Medal by the American Pomological Society for his contribution to *Prunus* breeding and genetics. The Award was presented at the APS Annual Meeting in Washington D.C. August 2, 2018.

Dr. Okie was born in Victoria, Texas, and attended Northwestern University and Prescott College, and received his BS from Oregon State University in 1973, his MS from Virginia Polytechnic Institute in 1976 and his PhD from North Carolina State University in 1980. Upon finishing his education in Horticulture and Genetics at the North Carolina State University and a short postdoctoral career, Dr. Okie accepted the position of Research Horticulturist at the USDA-ARS station in Byron, GA in 1980, where he served his entire career and retired in 2011 after 31 years.

During his career Dr. Okie showed originality and creativity in expanding the goals of the USDA-ARS Byron stone fruit breeding program to include development of germplasm resistant to major pathogens and pests, resulting in the largest collection of native *Prunus* germplasm in the country. He led the effort to develop techniques and identify potentially useful sources of genetic resistance to many complex traits. Dr. Okie's ability to anticipate the future needs of peach industry and consumer demands resulted in development of a germplasm that has been the subject of many genetic studies, and is still serving as a backbone for the major discoveries in peach genetics. His anticipation of the growing consumer demand for high-quality specialty crops such as plums and white-fleshed peaches and nectarines, resulted in the release of the first plumcot, two plums and several white flesh peach and nectarine cultivars adapted to the Eastern US. He introduced fourteen

early-mid season and nine late season yellow-fleshed peach cultivars superior to existing peaches for the Southeast. In recent years, more trees of these new Byron releases have been planted in the Southeast than from any other breeding program. In addition to white and yellow flesh material, Dr. Okie also anticipated demand for red fleshed fruits with potential health benefits. He developed peach and plum germplasm with high levels of anthocyanins. Levels of antioxidant activity in some Byron breeding lines were as high as in blueberries, and in further tests, extracts from high-anthocyanin peaches and plums showed negative effects on growth and differentiation of colon cancer cells in-vitro. One of the great scholarship contributions of Dr. Okie to peach and nectarine breeding worldwide is the description of 700 peach and nectarine varieties in the USDA Agricultural *Handbook of Peach and Nectarine Varieties*, published in 1998. This Handbook has been distributed in hundreds of electronic and printed copies to major peach growing countries of the world, where it is being routinely used by pomologists, breeders, growers, nurserymen and extension workers. It is the main source of the ancestry record for the U.S. peach breeding programs and is especially important in the new era of pedigree-based analyses.

In addition to his scion cultivar development, Dr. Okie co-developed Guardian™ Brand "BY520-9" rootstock, for which he was awarded the team award for Excellence in Technology Transfer. Guardian™ doubles peach tree longevity on replanted sites in the Southeast, and provides root-knot nematode resistance. Guardian™ was granted the first Plant Variety Protection (PVP) for a tree crop and is now the primary rootstock for the southeastern U.S., with over 20 million seeds sold since its release and its

estimated benefit to Southeastern growers, due to longer orchard life and reduced tree losses, at \$5 million annually.

In addition to the lucrative peach and nectarine breeding activities Dr. Okie encouraged development of a regional plum industry by releasing three plum cultivars, which are some of the few with commercial quality that are adapted to the Southeast. His efforts resulted in establishment of one of the largest breeding programs for "Japanese" plums for humid climates. Plum germplasm developed by Dr. Okie is being tested, grown or used for breeding in Italy, South Africa, Australia, New Zealand, Argentina, Brazil, Uruguay and China. Byron plums are planted by smaller, specialty crop growers from New York to Texas.

In his attempt to improve the practices in the traditional breeding programs Dr. Okie developed simple method of using check-digits to reduce errors in a breeding program and other types of similar research involving large sets of numbers. The published peer review paper enabled the group at University College, London to implement more robust system of check digits in clinical trials than had previously been used.

His pre-breeding and introgression activities created rich, diverse germplasm that provided and still provides segregating material for many important traits in *Prunus*. Dr. Okie studied the role of a unique leaf venation pattern of a peach sub-species in adaptation to arid environment by using genotypes with *Prunus ferganensis* background that behaved like typical xeric species, which use water more opportunistically compared to peach. He

was also the first to grow evergreen peach genotypes in a temperate zone to demonstrate their unique characteristics. These peaches originated in Mexico, but possess surprising cold-hardiness, despite not going dormant. Evergreen peach provided unique material for studying dormancy and cold-hardiness resulting in research at Kearneysville, WV on dormancy proteins and at Clemson on mapping of the responsible genes.

His contributions to the *Prunus* breeding and genetics have been recognized with an array of awards, including the Carroll R. Miller Award from the National Peach Council for research benefitting the peach industry in 2000 and the USDA-ARS Technology Transfer Award for Superior Effort for development of peach varieties and Rootstocks in 2001.

In summary Dr. Okie has released twenty-three peaches, three nectarines, one plumcot, three plums, and one peach rootstock (3 of these cooperatively). He has authored or coauthored over 95 refereed journal articles, over 130 trade articles and proceedings, 10 book chapters; and an USDA Agricultural Handbook. He was also the editor of the Fruit and Nut List of the American Pomological Society/ASHS for Lists 38-42 (1997-2004) and served as APS secretary 1986-1993. Dr. Okie is considered a primary expert in the eastern U.S. on peach and nectarine varieties and is to this day often consulted by fellow scientists, growers and extension personnel.

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