

TEXAS A&M PLANT BREEDING

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Dr. David Byrne conducts the *Prunus* and *Rosa* Breeding and Genetics Programs at Texas A&M University Department of Horticultural Sciences. He also teaches classes in fruit and nut production, tropical horticulture, and plant breeding and genetics. David has mentored graduate students in plant breeding and horticulture, having directed 10 Ph.D. students and 14 M.S. students during the past 25 years. Dave conducts research in the genetic improvement of peaches and roses that impacts not only Texans but the health and enjoyment of people around the world. David holds the Robert E. Basye Chair in Rose Genetics.

The Texas A&M University Stone Fruit Breeding Program works with others breeders, fruit companies and nurseries to develop superior early-ripening genotypes for low and medium-chill regions throughout the world. His specialty is the development of fresh market peaches and nectarines that are adapted to the mild winter regions of Texas and the world. The importance of this production zone is that fruit can be harvested earlier than fruit further north because the trees bloom earlier and the climates are generally warmer. This allows for a longer peach season and if you consider both hemispheres, a year round supply of peaches and nectarines. Recently, he has released the low chill Thai Tiger peach series for cultivation in northern Thailand in conjunction with the Royal Project to offer alternative crops to poppy production. His selections have been released and/or are being evaluated in China, Thailand, Taiwan, Spain, Egypt, South Africa, Mexico, Brazil, and Uruguay as well as multiple sites in the USA. He is currently in the process of releasing several new low chill peaches as well as a traditional yellow peach, a nectarine, and a low acid white peach series for the medium chill zone. He also actively works in research to improve embryo rescue techniques essential for the development of early ripening stone fruit, to understand the genetic diversity of peach germplasm, to improve the fruit quality of the low chill peach germplasm, and to document the health benefits of peach, nectarine, and plum consumption.

The rose breeding program was created when Dr. Robert E. Basye endowed the Chair in Rose Genetics. The goal of this breeding program is to develop beautiful, carefree landscape roses that gardeners in all climates can enjoy. Thus developing adapted landscape roses – those that have excellent disease resistance and produce a plethora of high quality roses under hot humid conditions – is the major thrust of the breeding program. Given that the best horticultural traits are exhibited in the tetraploid rose group and the best disease resistance is seen among the diploid germplasm, the rose program is really two breeding programs. One on the diploid level to develop everblooming, highly disease resistant breeding materials, and the second is on the tetraploid level to increase the horticultural qualities of the more disease resistant landscape roses. The products from these programs are intercrossed to directly create triploids while natural diploids are treated chemically to double the chromosome number and create artificial tetraploid roses which is then crossed with natural tetraploid breeding material.

This breeding work has resulted in a number of highly floriferous diploid and thornless tetraploid lines with high disease resistance. Two of these are undergoing final evaluation before release. Dr. Byrne has done extensive research in rose seed germination, disease resistance evaluation, rose germplasm diversity, rose genetics and cytogenetics, and currently is developing a molecular map of the diploid rose which will be aligned with the various diploid and tetraploid maps that have been developed by colleagues throughout the world.

Recently, Ralph Moore, a rose breeder with 80 years of experience and known as the “Father of the Miniature Rose” donated his rose germplasm and rose cultivars as well as a cash gift to the Rose Breeding and Genetics Program. This donation includes about 150 of his cultivars, about 400 unreleased selections and breeding lines, and his notes on the breeding usefulness of this germplasm. This rose material is under evaluation in both California and Texas and the Office of Licensing and Commercialization is pursuing commercial partners to exploit the existing and potential cultivars from this donation. This germplasm also is being incorporated into the breeding program to develop cultivars that have the best traits of the Basye, TAMU, and Moore rose germplasm.

Additional information about Dr. Byrne’s breeding program can be found at <http://hortsciences.tamu.edu/faculty/byrne.html>.

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