

Geneticists seek mother of all macadamias on the Gold Coast

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(PhysOrg.com) -- The DNA of rare and endangered macadamia species will soon be fingerprinted in an effort to determine the original wild tree or trees that launched the global macadamia industry.

Some of the world's leading macadamia experts will gather on the Gold Coast tomorrow (5 July) to collect leaf samples to kick-start [genetic research](#) at The University of Queensland (UQ), which could lead to the discovery of more productive or disease resistant varieties of this premium nut crop.

Remnants of the original species of macadamia [plants](#) are found in the wild between Ballina and Maryborough and [DNA](#) from the 'wild' ancestors will help to confirm the source of the nut's outstanding qualities.

Americans discovered the macadamia's gourmet properties in 1892 when Captain Robert Jordan of the US navy returned to Hawaii with a bag of macadamias from Pimpama. Hawaii then went on to develop a very successful industry which assisted Australia to transform its small cottage industry to one that now leads the world. Today, the Australian macadamia industry has an annual farm gate value of \$120,000,000 and treble that in sales throughout the world.

Research will involve Australian scientists from UQ's newest institute the Queensland Alliance of Agriculture and Food Innovation (QAAFI). They include world authority on plant breeding and genetics, QAAFI

scientist Dr Craig Hardner, and specialists from the Australian Macadamia Conservation Trust working in conjunction with the Australian Macadamia Society. The effort includes significant input from macadamia historian Ian McConachie and Australian macadamia representative Dr Michael Powell.

The macadamia is considered to be one of the world's premium nuts. Mr McConachie says that as the country of origin, Australian 'wild' macadamia plants hold the genetic diversity to breed increasingly more productive, high quality varieties that could have resistance to pests and diseases.

“In 1892 nuts were collected from Pimpama south of Brisbane, taken to Hawaii where they were planted and some of the resulting trees were selected to become very successful commercial varieties,” Mr McConachie said.

“One of the goals of our research is to determine if the macadamia known as the Jordan tree (which is currently threatened by subdivision) has the same DNA as the Hawaiian cultivars. If so it deserves to be known as the ‘Mother of all Macadamias’. The Jordan tree to be sampled on the Gold Coast is the only known example of the original plant from which Captain Jordan collected his nuts.”

QAAFI scientist, Dr Hardner, said initially the group will gather a large number of leaves from a range of 'wild' [trees](#) of *Macadamia integrifolia* (the main commercial species grown from the Pimpama district in the Gold Coast hinterland).

“Then our research team will spend several months fingerprinting the leaves to try and understand the plant's original DNA,” Dr Hardner said

“We are all familiar with fingerprinting to identify a criminal for

example, well, this is a similar theory – by mapping the DNA held by these original macadamia species, we will finally be able to understand the relationship between the plants that were exported from Australia over one hundred years ago and the ones that are grown today.

“We have an iconic crop right on our doorstep which in some respects we have taken for granted until now.”

According to Macadamia Conservation Committee chair, Dr Michael Powell, south east Queensland and northern New South Wales are the only places in the world where macadamia plants can be found in the wild.

“However, due to extensive land clearing by early settlers, many plant populations have been lost, and the surviving populations are very fragmented, are small and as a result are now considered endangered or vulnerable,” Dr Powell said.

“One of the additional benefits of this ‘fingerprinting’ could be preservation of other yet untapped qualities. While plant breeding has provided benefits to industries and consumers alike for many generations, we risk losing the source of this success if wild species disappear and their genetic wealth is lost.”

“The Macadamia Conservation Trust was formed in 2007 to promote the conservation of this important Australian plant and this new research is likely to help us achieve our goal.”

Macadamia nuts are renowned for their flavour and high volume of healthy oils. Australia is now a major producer of the nut that is favoured in the US, Japan and Europe as a healthy snack food, confectionery or as ingredients in ice cream or biscuits.

Provided by University of Queensland

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