

# Genetic data promises new future for kiwi fruit

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Kiwifruit lovers can look forward to new, novel forms of their favourite fruit thanks to the release this week of crucial genetic data which fruit breeders say will help them naturally breed new varieties with increased health properties and exciting colours and flavours.

Researchers at New Zealand-based fruit science company HortResearch and listed New Zealand biotech company Genesis Research and Development Corporation Limited announced today that they would complete the public release of the world's most extensive collection of kiwifruit DNA sequences.

The release comprises over 130,000 kiwifruit gene sequences - referred to by scientists as expressed sequence tags (ESTs). These are DNA sequences from active genes in the plant; genes that govern such characteristics as flavour, colour, shape, vitamin content and aspects of fruit development such as ripening and storage life.

HortResearch and Genesis released a similar number of apple ESTs in March 2006. Those genes are now part of HortResearch's world-renowned apple and pear breeding programme.

A paper detailing the discovery and analysis of the Kiwifruit EST's was published today by UK-based peer-reviewed journal *BMC Genomics* (See link to paper as a feature at [www.biomedcentral.com/1471-2164/9/351](http://www.biomedcentral.com/1471-2164/9/351))

HortResearch scientist Dr William Laing says the kiwifruit ESTs were identified over an eight year period and will be used by the company's breeders to speed up development of new kiwifruit varieties through a technique known as Marker Assisted Selection (MAS).

In a MAS breeding programme, breeders use traditional crossing techniques to breed new varieties – which are then assessed for their commercial potential by searching their DNA for markers that indicate the presence of genes linked to desirable fruit traits. ESTs are essential in helping scientists identify the genes they're looking for.

"If breeding a new fruit with a specific trait is like finding a needle in a haystack, then MAS is like having a metal detector," says Dr Laing.

"Our breeding programme with ZESPRI generates many thousands of seedlings every year. Without MAS, we would have to plant out each of those seedlings, wait years until they bear fruit and then assess which plants we wanted to commercialise or use for further breeding. With MAS, we can quickly "scan" the seedlings and find out right-away which ones are likely to have the type of fruit we want."

Dr Laing says that's good news for both kiwifruit growers and consumers because it will help in breeding new commercial varieties that include some of the numerous health, flavour and colour characteristics found in wild kiwifruit.

"The genus Actinidia, to which all kiwifruit belong, is incredibly diverse and contains many colours, shapes, flavours and other attributes beyond the two most prominent industry cultivars, the green-fleshed Hayward and yellow-fleshed Hort16A (better known as ZESPRI™ GOLD Kiwifruit).

"HortResearch has a collection of 23 species of kiwifruit and many more

can be found in China, from where kiwifruit originated. We're now better placed than ever to unlock some of that natural resource and deliver it to consumers."

HortResearch acting Chief Executive Dr Bruce Campbell said the fact that New Zealand researchers were the first to publish such a large body of data on kiwifruit biology would pay significant dividends for New Zealand's billion dollar kiwifruit industry.

"The work involved in identifying these ESTs, plus research that has been done to investigate their use in ongoing breeding programmes proves New Zealand's world leadership status in kiwifruit science. Now, by sharing the EST database with researchers worldwide, we will be able to gain even further knowledge through collaborations with other researchers.

Dr Campbell said the benefits to New Zealand's kiwifruit industry would be quickly realised through HortResearch's partnership with ZESPRI Limited.

"HortResearch breeds kiwifruit exclusively for ZESPRI and the New Zealand kiwifruit industry. It is a relationship that has already seen the breeding and highly successful commercialisation of ZESPRI™ GOLD kiwifruit and now looks poised to deliver more exciting fruit to the marketplace."

ZESPRI New Products Innovation Leader Bryan Parkes said the use of ESTs will help fast-track the future identification of superior cultivars.

"This science is a great fit with our natural breeding strategy, which is committed to delivering high-quality, all natural kiwifruit that offer consumers health, convenience, pleasure and a guarantee of 100% natural goodness."

"This new molecular insight into kiwifruit, coupled with time-honored breeding techniques offers the perfect combination of innovation and tradition while ensuring customers that ZESPRI™ Kiwifruit really are nature's best."

Source: Horticulture and Food Research Institute of New Zealand Limited

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