NEWS FROM

THE NATIONAL PASSIONFRUIT BREEDING PROGRAM

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PF15000 National Passionfruit Breeding Program is a strategic levy investment under the Hort Innovation Passionfruit Fund.

We are now just over 18 months into the project. Quite a lot has happened since I last wrote in the spring edition of The Passion Vine.

ROOTSTOCK & PANAMA BREEDING, TRIALLING AND SELECTION

Added after the initial program began, we have now planted 137 Panama-type vines from 24 lines and crosses (mostly 4-6 vines per line/cross). We will be inspecting and testing these vines to select the best lines for the second stage of the trial (planted out in 2018). The selected lines will be trialled more extensively on grower's properties as potential rootstock varieties and a number of lines will be trialled in a Panama full variety trial looking at vine health, fruit production quantity and quality.

The Panama and rootstock vines planted at Burringbar will be subject to attack by the Fusarium fungus now known to be present in the soil there. This should give us some idea of the resistance to this pathogen amongst these varieties.

SCION VARIETY BREEDING — GRAFTED SELECTIONS FROM 2016-2017 TRIALS OF SEEDLINGS

There were 580 seedling grown vines that were part of the 2016-2017 trials. Of the 29 promising vines, the four highest scoring vines were grafted in larger numbers for distribution to six growers for further assessment during 2017 - 2018. I have already visited four of the sites to see these trial vines and they are all looking healthy and vigorous, and some are fruiting quite heavily already. Although a promising start, the fruit size is perhaps overly large and some triallists are reporting issues with the fruit not detaching from the vine. Further time is needed to evaluate the performance of these vines.

DNA MARKER DISCOVERY

At the PAI AGM in October I presented information on the discovery of DNA markers that appear to have good association with fruit quality traits in one of the passionfruit crosses. These findings are based on the DNA marker genotyping that was carried out as part of a seed grant from Southern Cross University (in 2015) on the **Toms Special x Lacey** progeny planted out by PAI – originally at Shane Adams property at Burringbar and then grafted and a copy located at Nick Hornery's property at Newrybar.

Fruit from the Newrybar population was sampled last winter and measured for the following characters: fruit weight, fruit colour (in its simplest form just yellow or purple), pulp pH and BRIX. We scored a smaller number of vines at Burringbar for fruit quality traits. The next step in the process is to convert the markers into a useable form and then validate these markers in a larger population of **Toms Special x Lacey** progeny. These are being grown at Nick Hornery's place once again.

Once we have validated the markers, we can use them in the selection of the next generation. By following this method, the identification of these four markers can increase 16-fold the chance of selecting an excellent vine for commercial release. Although this process may appear laborious, it substantially increases the likelihood of identifying viable commercial varieties in the future and is important groundwork from which to develop a long-term breeding program for the industry.

To manage your time expectations, please understand that at the moment our DNA markers are short pieces of DNA sequence and we first of all need to find these bits of sequence in larger fragments to develop cost effective markers for selection. This is not going to happen next week, but we are targeting the end of the year to have this stage completed.

OWNERSHIP OF PASSIONFRUIT VARIETIES

Following the request we made in the Summer edition of The Passion Vine, I believe all ownership questions have been resolved satisfactorily and the program can go forward and use vines that do not have ownership claims on them as inputs for crossing and selection for the project.
One final point to note, any new varieties developed as a result of this project will be owned by Hort Innovation and Southern Cross University as 'tenants in common'. If a variety is commercialised and if royalties are collected for this variety, Hort Innovation will transfer its share of royalties back to the passionfruit levy fund.

Thanks to all for your assistance in the program and best wishes for the year ahead.

ABOVE: This photo shows a trial selection from the Sweetheart by Pandora cross made in 2016. SP-16-102 is a healthy, vigorous vine producing disease-free fruit that are large in size and sweet to taste. The size of the fruit size is expected to reduce as the vine matures and after cycling through a few iterations of grafting.

ABOVE: This photo is of a selection from the Tom's Special by Lacey cross planted out in 2016. The vine is healthy and vigorous, and although there is no fruit visible here, the mother vine had typical purple passionfruit tasting fruit – without being too acidic and appeared to be disease free, unlike some siblings which were virus affected.