

PF22000

National Passionfruit Breeding & Evaluation Program

Dr Mobashwer (Mo) Alam, University of Queensland

The National Passionfruit Breeding and Evaluation Program has been recently contracted to deliver new passionfruit varieties for Australian growers.

The new 5-year passionfruit breeding project PF22000 is being funded by Hort Innovation through the passionfruit research and development levy, and funds from the Australian Government.

The project is also receiving support from the University of Queensland who have been selected as the Service Delivery Partner. The primary goal of this project is to develop a new breeding strategy to reboot Australia's passionfruit industry.



Project leader Dr Mo Alam. *Photo credit: Megan Pope*

The research team consists of lead researchers from Queensland Alliance for Agriculture and Food Innovation (QAAFI) at the University of Queensland.

- The project leader, Dr Mobashwer (Mo) Alam, brings over 20 years of experience in national and international plant breeding research and development (R&D) in horticultural, industrial and field crops
- Professor Bruce Topp is a renowned horticultural crop breeder
- Associate Prof Craig Hardner is a globally recognised Quantitative geneticist
- Professor Topp and Associate Professor Hardner have over 40 years of research experience in the Australian horticulture industry
- Associate Professor Heather Smyth has two decades of research experience in flavour chemistry and sensory science
- Associate Professor John Thomas has over 40 years' experience as a plant virologist, with extensive research experience in virus diseases of passionfruit

The new breeding team will build upon and expand the genetic improvement program previously developed by Southern Cross University through two successive projects, PF15000 and PF19000.

Currently, the Australian passionfruit industry faces several problems, including the unavailability of new varieties, yield declination of the main scion varieties (Sweetheart and Misty Gem), blind tipping, and reduced vigour, inconsistent fruit size, disease susceptibility, and adaptation challenges to changing climates.

The primary objectives of this new project are to:

- Generate new progenies for the development of new passionfruit selections with improved agronomic performance, product quality, and consumer appeal
- Develop hybrid varieties for industry adoption



Dr Mo Alam with Keith Paxton. *Photo credit: Megan Pope*

- Develop and apply new technologies and methods to enable rapid breeding
- Generate comparative performance data for progenies
- Communicate performance of new selections and varieties to the Australian passionfruit industry

With input from the research team, this project seeks to focus on developing new passionfruit varieties for the industry, considering production requirements, consumer preferences and quality and pest and disease tolerances.

Dr Alam will also investigate the potential value of accessing passionfruit genetics from breeding programs overseas to feed into the Australian passionfruit breeding program.

The current breeding program is funded through until the end of 2027 and Dr Alam will use a range of approaches to improve the chances of successfully identifying superior passionfruit selections, including efficient breeding strategies, bioeconomic and choice preference models, development of molecular markers for productivity and quality traits and a genomic selection model for yield.

A germplasm collection will also be established to feed into breeding efforts. Each year, progeny will be developed and assessed for performance.

The project will work with industry representatives and also include grower-based trials for promising selections to be evaluated in the field under different production conditions.

Progress on the project will also be communicated through Passionfruit Australia and other industry forums as relevant.

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**PASSIONFRUIT
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