



# THE SCIENCE OF NATURE

When farmers cross paths with scientists, the results could help feed the world.

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GRAHAM BROWN, ABUNDANT PRODUCE RESEARCH AND DEVELOPMENT MANAGER, IS FIRMLY FOCUSED ON CREATING NEW AND IMPROVED VEGETABLES

Once upon a time hybrid produce was the stuff of science fiction. Nowadays, thanks to science rather than fiction, it's becoming commonplace. If you've eaten broccolini, Lebanese cucumbers, truss tomatoes or kalettes, you're already part of the hybrid bunch.

But how far can we take hybrid produce and what are the outcomes for Aussie consumers and farmers?

One person who knows more than most about hybrids is Graham Brown, Research and Development Manager at Abundant Produce.

The company he helped launch operates under two brands specialising in the diverse fields of plant breeding, intellectual property development and nutraceuticals. Abundant Seeds breeds enhanced hybrid plants that result in improved performance for farmers and high-quality products for consumers. Abundant Natural Health transforms superior, purpose-bred natural ingredients into active skin and body

care products like their Tomato Infusion face cream.

Abundant Produce had a big debut on the Australian Stock Exchange (ASX) in 2016, and with quality seeds costing more than their weight in gold, it has gone from strength to strength.

In fact, it is Australia's only ASX listed hybrid plant breeder dedicated to world-class agri-science research into commercially valuable intellectual property.

But what exactly does that mean? Brown says it results in targeted breeding specifically for local environments so Australian growers and consumers get to experience better products.

"The major strengths of F1 hybrids are yield and general crop improvement. Farmer's investments can be recouped thus allowing further outlay and enhancement

which can, in turn, make produce more cost-effective for consumers."

The first filial generation of a plant's offspring of distinctly different parental types is the filial 1 hybrid (F1 hybrid). An F1 hybrid is the result of crossing two pure parental plant-lines to achieve a desired result.

The value in F1 hybrids come from their increased yield, typically in the range of a 15-50%, which is attributed to Hybrid Vigour. Hybrid Vigour is the improved or increased function of any biological quality in a hybrid offspring.

Brown attributes Abundant Produce's successes to its ability to meet a gap in the market.

"Recently there has been a lack of vegetable breeders who can confidently concentrate on breeding for Australia's unique soils and environments.

**An F1 hybrid is a first-generation plant, the result of crossing two pure parental plant-lines in order to achieve certain desired characteristics**



THIS PAGE: THE PROOF IS IN THE PRODUCE  
OPPOSITE PAGE: AZZI FAMILY HYBRID CROPS



## Whilst one benefit of hybrids is increased yield, the possibility of increasing disease resistance is seen as an attractive - and competitive - advantage for many Australian growers

“Our mantra is ‘Better growth for Australian Farmers’; and our goal is to get as much return as possible for Aussie farmers as well as to lead the way on the global agricultural stage.

“Farming in Australia is a tough business and any input which creates value, like hybrids created specifically for our environment, is held in high esteem.”

Brown predicts the conversion of traditional crop varieties to F1 hybrids will continue and innovation will lead to breakthroughs allowing F1 hybrids to be extended.

“The University of Sydney is currently working on an exciting program in hybrid wheat which could potentially revolutionise the industry.

Due to problems with seed production, wheat hybrids have never been commercially viable despite them

showing an increase in yield stability, which is vital in a predominantly hot and dry climate like Australia.

Whilst the increased yield from hybrids is the major benefit for Australian agriculture, it is also possible to increase a crop’s disease resistance. The hybrid’s disease package is improved simply by having complimentary parents.

As the need to produce more food with fewer resources for the world’s growing population continues, F1 hybrids, to some extent, will aid supply and demand issues.

Hybrid grower, Tarek Azzi is the General Manager & Proprietor of his Sydney-based tomato and cucumber growing business. The Azzi family were one group of innovative growers who identified the commercial viability of growing local produce all year around

within the Sydney Basin.

Azzi recalls that he and his father set up a low-tech greenhouse produce and farming business back in the late 1990s.

“We were encouraged by friends who were established cucumber growers. All of them supported us and shared their knowledge selflessly.

Initially supported by the late William Azzi, who introduced what is now called the Lebanese cucumber variety to Australia, they have gone on to produce different varieties including egg tomatoes, on-the-vine tomatoes, and the normal salad variety tomatoes as well as their cucumbers which have all been of the ‘Lebanese’ variety.

For the Azzi family business, Abundant Produce’s hybrids are an obvious choice because they are developed for Australia-specific growing conditions. They increase the per-seed-output and cater for specific regional customers and their varying tastes.

“Hybrids are going to go very far in my opinion. They have already improved the commerciality of producing more, better-quality fruit.

Azzi favours hybrids for their sustainability as well, the plants require

less land, reduced water, fewer fertilisers and chemicals. The bonus of more fruit per plant and a superior aesthetic is hard to resist and allows growers to cultivate better quality crops over a longer period.

The potential for year-long local production for local markets and higher quality crops with tolerance to weather conditions and soil variety, combined with heightened taste per fruit are mighty strengths. However, he is honest about the possibilities and limitations of the hybrid evolution as well.

“Some of the weaknesses, as is with anything that is newly developed include new issues in plant and fruit growth and wondering what the quality will be. New strains will require fertiliser optimisation and chemical regimes to be developed.

Azzi says he has an exhaustive list of ‘must haves’ when considering a new hybrid for inclusion in his successful business.

“Firstly, I study the time, in weeks, from seeding to picking the first fruit or node on the plant. Other considerations include the average weight per-fruit produced, the average total weight of all fruits, and how much a single seed

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or plant will produce through its productive lifespan.

Another issue is demand for the fruit and balancing maintenance costs against this demand. For this reason, pest and disease resistance, the Hybrid Vigour is important.

“Finally, in the case of growth or quality issues encountered with a newly developed hybrid, one must ask, does the seed developer provide any local horticultural and engineering support?”

Abundant Produce’s CEO Tony Crimmins outlines, “we’re flexible, agile, and can experiment and make the improvements on Australian soil that are applicable globally.

“We know that if we can make it work in Australia that we can make it work anywhere and that’s the true value that we take to our global community.” ■

### THE SEEDS OF SCIENCE

Two of Australia’s senior research institutions, the University of Sydney and UNSW collaborate with Abundant Produce to deliver new research in molecular biology, plant pathology, agronomy and chemistry.

Their aim is to create high-value food crops and botanically active extracts for the booming skin care and nutraceutical industries along with seeds for the global agricultural industry.