

[Space age plant breeding lights the way for future crops](#)

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NASA experiments to grow wheat in space were the inspiration for University of Queensland scientists to develop the world's first 'speed breeding' procedures here on planet Earth.

UQ Queensland Alliance for Agriculture and Food Innovation (QAAFI) Senior Research Fellow Dr Lee Hickey said the NASA experiments involved using continuous light on wheat which triggered early reproduction in the plants.

"We thought we could use the NASA idea to grow plants quickly back on Earth, and in turn, accelerate the genetic gain in our plant breeding programs," Dr Hickey said.

Dr Hickey was part of the team from the UQ School of Agriculture that began trialling speed breeding techniques to cut the length of plant breeding cycles more than 10 years ago.

"By using speed breeding techniques in specially modified glasshouses we can grow six generations of wheat, chickpea and barley plants, and four generations of canola plants in a single year - as opposed to two or three generations in a regular glasshouse, or a single generation in the field," Dr Hickey said.

“Our experiments showed that the quality and yield of the plants grown under controlled climate and extended daylight conditions was as good, or sometimes better, than those grown in regular glasshouses.”

Dr Hickey said information on how to use speed breeding was increasingly in demand from other researchers and industry.

“There has been a lot of interest globally in this technique due to the fact that the world has to produce 60-80 per cent more food by 2050 to feed its nine billion people.”

Dr Hickey said the level of interest in speed breeding led to his collaborators at the John Innes Centre and the University of Sydney to write the *Nature Plants* paper, which outlines all the protocols involved in establishing speed breeding systems and adaptation of regular glasshouse facilities.

UQ PhD student Amy Watson was a co-first author of the paper and conducted some of the key experiments that documented the rapid plant growth and flexibility of the system for multiple crop species.

Dr Hickey believes the sky is the limit for the new technology and he is now investigating the integration of speed breeding with other modern crop breeding technologies.

“It could also have some great applications in future vertical farming systems, and some horticultural crops,” Dr Hickey said.

Click [here](#) to read the published paper in *Nature Plants*.