

# How onions recognize when to bulb

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New research from New Zealand will help to breed new onions tailored to grow in specific conditions.

Onions, the third largest vegetable crop in the world, form a bulb in response to lengthening days, however the [molecular mechanisms](#) controlling this response were not previously known. Research undertaken by Plant & Food Research and the University of Otago has identified the gene controlling bulb development, the first step in discovering genetic markers that can be used as tools to screen conventional breeding programmes for new onion varieties with the right [genetic profile](#).

The research is published in the prestigious online journal *Nature Communications* with related research published in *Theoretical and Applied Genetics*.

"This research is an excellent example of how new genome technologies can enable major discoveries that, in the past, have been difficult," says Associate Professor Richard Macknight. "By understanding how these [plants](#) control development of the bulb, we can support the breeding of new cultivars that have the right genetic profile to respond to specific growing conditions, ensuring each plant produces a bulb for sale on the market."

"Commercial production of onions relies on cultivars tailored to the environment they are grown in, responding to the right combination of day length and temperature to form a bulb," says John McCallum of

Plant & Food Research. "Around 90 million tonnes of onions are produced globally each year, but genetic studies of onions have been limited. Our research is now beginning to link genetics and physiology of [onions](#), allowing industry to tap into more diverse genetic resources and breed products adapted to different and changing environments."

Onion is the second largest vegetable crop in New Zealand, with 586,000 tonnes produced each year and generating \$62 million in export revenues.

Provided by University of Otago

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