

New technology to revolutionise controlled ripening of fruit

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Mr Binh Ho and Professor Bhesh Bhandari.

(Phys.org)—Materials scientists from The University of Queensland (UQ) are set to revolutionise the fresh fruit industry with a new technology that converts gases into a powder form.

Professor Bhesh Bhandari and [PhD student](#) Mr Binh Ho, from UQ's School of Agriculture and Food Sciences, have developed a technology that will dramatically improve the safety, efficiency and effort involved in controlled ripening of fruit.

Compressed [ethylene gas](#)* is used extensively to control ripen fruit such as bananas, mangoes, avocados, citrus and tomatoes that are picked at "commercial maturity", which is a hard green, but mature stage, before ripening has started.

Professor Bhandari said the compressed ethylene gas, which is stored in cylinders, was highly volatile and explosive accidents have occurred in the past.

"Compressed gas can be expensive, difficult to handle and unsafe," Professor Bhandari said.

"To try to overcome these disadvantages, we have been looking at methods to encapsulate the gas in various types of [solid materials](#) to create a safe and convenient powder form."

The research team has identified a starch derivative [biological material](#), which has [cavities](#) in its [crystalline structure](#) that can encapsulate the ethylene gas.

The ethylene gas is released from the complex powder when the temperature and humidity is raised.

"We have developed a food grade, environmentally friendly biological powder that can release the ethylene gas very quickly in humid and high [temperature conditions](#)," Mr Ho said.

"This would make handling the ethylene much easier and safer and allow for very small amounts to be used to ripen small batches of fruit.

"It could also potentially be placed in trucks that transport the fruit from the farm so that the fruit arrives at the market perfectly ripe."

Professor Bhandari presented his findings at the International Drying Symposium in China last week, where he was also presented with an international award in recognition of his research excellence in drying science and technology.

Awarded just once every four years, the "Excellence in Drying Award" is presented by the International Drying Symposium Committee to the world's top researcher in recognition of their achievements in the transfer of fundamentals into practice. The award is sponsored by AFSIA (French Association for Drying in Industry and Agriculture).

Professor Bhandari and Mr Ho are working with UniQuest, UQ's main research commercialisation company, to prepare the technology for industry investment and licensing opportunities. An application for patent protection for the technology has been made.

Provided by University of Queensland

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