

Scientists grow longer-lasting salad greens

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Researchers at the University of Southampton have helped to produce salads with a longer shelf-life.

They worked with Vitacress, one of the biggest producers of packaged salads, to understand what keeps salad leaves fresh for longer. Their results are now being used in breeding programmes and within Vitacress' own practises to produce salads with a longer shelf life.

Before they reach our supermarkets, baby salad leaves undergo rigorous processing that includes harvesting, transportation, washing, sanitisation, removal of excess water, and packaging. Only the most robust leaves can survive this process without being bruised and damaged. This makes growing salad crops with 'processable' leaves extremely important for the packaged salad industry, as it reduces waste and increases shelf life.

Lead researcher on the project Professor Gail Taylor from the University of Southampton says: "Developing high quality, nutritious, sustainable salad leaves is really important for Vitacress; it's a key part of their business. They need science to achieve that, and the science we've done has plugged directly into the business."

Professor Taylor and colleagues, together with Vitacress, used funding from an Industrial Partnership Award (IPA) from the Biotechnology and Biological Sciences Research Council (BBSRC) to work out the genetics of processable salad leaves so that this information could be used by industry in salad crop breeding programmes. First, they identified what it was about certain salad leaves that gave them a longer shelf life. They

found that smaller, tougher leaves, with lots of small cells packed closely together, lasted longer. They then worked out which regions of the lettuce genome were responsible for these desirable characteristics.

As a result of this research, the scientists have initiated a breeding programme in which crop breeders are selectively breeding plants with the genetic material responsible for leaves with a longer shelf-life.

In the course of the project, the researchers also made the unexpected discovery that using less water when growing salad improves its shelf-life, which has added environmental benefits.

"We were able to show that if you reduce water use in intensive [salad](#) production by about 20 percent, you actually develop smaller, tougher leaves with stiff cells walls, which is what we're interested in," says Professor Taylor, "and at the same time, the company can reduce their water footprint."

"So we've used fundamental biological knowledge and applied it both through the genetic route and through crop production techniques to help the company improve the quality of their product," she adds.

Dr Steve Rothwell from Vitacress says: "The results open the door to exciting further studies across a wider range of crops and geographies aimed at driving down the use of water whilst improving crop quality and [shelf life](#)."

Following the success of their IPA project, the partnership between the researchers and Vitacress has grown to include a seed company in the USA, who are using the results of the project in their breeding programmes, and Sainsbury's, who sell many of Vitacress' products. Sainsbury's and the seed company have jointly funded two of Professor Taylor's PhD students.

"We now have a partnership which takes in the whole chain," says Professor Taylor. "We deal with the breeder in the USA, so we can supply our ideas to them directly, then Vitacress grow the crops which they supply to Sainsbury's. That sort of partnership is quite difficult for an academic group to achieve, and it is through our work with Vitacress that we have developed these links."

Provided by University of Southampton

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