

# Early suntan helps lettuce crops

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New Zealand's intense ultraviolet light may be bad for the skin, but it could provide a boost for vegetable production, according to new research by a Massey University crop scientist.

Dr. Jason Wargent, a senior lecturer at the Institute of Natural Resources, has found exposing lettuce crops to ultraviolet (UV) light in the early stages of growth leads to increased photosynthetic activity and increased yield.

His United Kingdom-based research team took two sets of lettuce seedlings and exposed one to UV-B light while still seedlings.

“Many crops are quite heavily protected from the sun when they are very young, via the use of poly-tunnels or glasshouses, but in this study we allowed the lettuce crops to be exposed to UV light earlier,” Dr. Wargent says. “Usually they are grown indoors until they are a youngish age then they get moved outside. In this study we put the plants into poly-tunnels which were covered in a film that allowed the UV light through.”

At harvest, the plants that had the early UV exposure were bigger.

“We examined photosynthetic capability in the plants, and our study shows the plants that were being exposed to UV had higher photosynthetic rates, and also seemed to be more robust against high temperature and light stress,” he says. “What we think is happening is that the early period of exposure allows a plant to, in effect, build up a tolerance to UV so that when they get moved outside, they're able to

withstand sunlight better.”

It is comparable to inoculating a child against disease, Dr. Wargent says. “It appears that a little bit of a bad thing – in this case UV light – does you good. When the plants were moved outside they were more ready for the stresses that plants usually encounter in the field, whereas the non-exposed plants were not.”

Many crops in New Zealand are grown outdoors, and Dr. Wargent says if they were better prepared to make that transition, yields could increase. “This has ramifications for most of the vegetable and some other [crops](#) grown in New Zealand, not just lettuces.”

Dr. Wargent says further research is being carried out to see what the New Zealand levels of UV can really do in terms of the potential to manipulate crop quality.

The research was recently published in the leading plant science journal *Plant, Cell and Environment*, and Dr. Wargent last week gave a paper on the research at the International Botanical Congress in Melbourne.

Provided by Massey University

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