











Figure 5. Floating row covers.

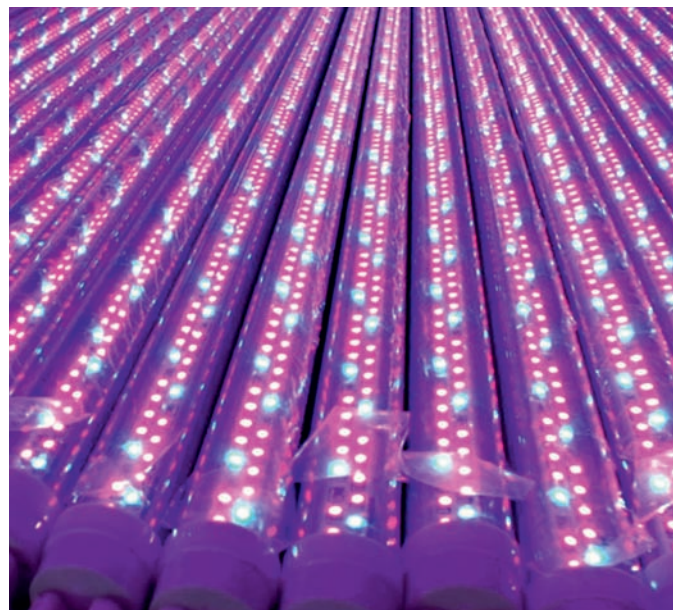


Figure 6: LED lights.

## Deficit irrigation

Maintaining lettuce free of water stress, from sowing to harvest, is a good irrigation management strategy. There is some evidence, however, that drip irrigation can result in a 1–2-day increase in shelf-life for Iceberg and Cos lettuce as compared to overhead irrigation.

Sprinkler irrigation is useful for helping plants to establish well, but after that drip irrigation allows better control of soil moisture, and also avoids wetting the foliage, which helps reduce foliar disease.

There is some recent evidence that applying a mild water stress to Cos lettuce crops of 15% below full irrigation can reduce cut-edge browning and increase the phenolic content of the leaves.

Applying mild water stress seven days before harvest combined with drip irrigation can also reduce microbial breakdown of Iceberg lettuce in storage. In general, excessive irrigation and overhead sprinkler irrigation, both increase microbial breakdown of harvested lettuce in storage, e.g. processed fresh-cut lettuce.

## Floating row covers

A study of babyleaf lettuce grown in south Queensland, showed the use of floatin crop covers (Figure 5) could reduce insect contamination of lettuce, and reduce

customer complaints. The covers could reduce insect infestation by up to 90%, exclude windblown foreign bodies, and would have little impact on general quality, strength, and shelf-life compared to standard unprotected growth.

## Light

Light-emitting diode (LED) technology (Figure 6) has made it feasible to regulate light environments and thus provide ideal light quality, intensity and photoperiod, especially in protected facilities, opening exciting new opportunities for increasing phytochemical content in vegetables.

In a study in Taiwan, hydroponically grown Butterhead lettuce under red, blue, and white LED lights resulted in better growth, faster development, improved nutrition, appearance, and eating qualities (i.e. sweetness and crispness). Pre-harvest exposure of hydroponically grown lettuce to red and blue LED light for 48 hours can reduce nitrate accumulation by more than 50% and increase soluble sugar content more than tenfold.

For more information contact Dr Roberto Marques, NSW DPI [roberto.marques@dpi.nsw.gov.au](mailto:roberto.marques@dpi.nsw.gov.au) or Dr Gordon Rogers (AHR) [gordon@ahr.com.au](mailto:gordon@ahr.com.au)