

# Working in the dark with photosynthesis

By **KEN BALLAMY**

INFRA-RED light can penetrate soil.

We often think of photosynthesis as happening in the daylight hours, but some bacteria use infra red light for photosynthesis.

This means photosynthesis can be active even in what we think is darkness.

Provided there are enough phototrophic or photosynthetic bacteria and other organisms, which can accept non-visible light, photosynthesis can go on 24 hours a day.

In the dark, the solar panels operated by plants don't work.

This means sugar production has to slow down and plants even lose some carbon at night during respiration.

To help with this, plants make friends with a community of microbes containing photosynthetic bacteria and even trade them sugars and other substances for special energy compounds, which I call photon packs, when there are enough of them present.

These photon packs help plants

make sugar. This means that plants can share in a second wave of photosynthesis outsourced to soil organisms, when these organisms are present in numbers.

Increased overall photosynthetic activity results in greater capture of carbon dioxide from the air, greater sugar production and better biomass growth all round.

As long as the right microbes are present around a plant, sugar production can happen day or night, light or dark, just as it does on the dark and shady floor of a rainforest, or deep in the ocean.

Build the microbes, share their photon packs, and photosynthesis happens, even in the dark.

(Ken Bellamy is the director of Townsville-based biotech company Vital Resource Management — [enquiries@vrm.com.au](mailto:enquiries@vrm.com.au) — established in 1997 to offer sustainable and affordable improvements in water management and food production. He is also a director of Prime Carbon, set up in 2004 to help assess and register farm-based carbon offsets.)