

Insight into plant behavior could aid quest for efficient biofuels

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Tiny seawater algae could hold the key to crops as a source of fuel and plants that can adapt to changing climates.

Researchers at the University of Edinburgh have found that the tiny organism has developed coping mechanisms for when its main [food source](#) is in short supply.

Understanding these processes will help scientists develop crops that can survive when [nutrients](#) are scarce and to grow high-yield plants for use as biofuels.

The alga normally feeds by ingesting nitrogen from surrounding [seawater](#) but, when levels are low, it reduces its intake and instead absorbs other nutrients, such as carbon and [phosphorus](#), from the water. The organism is also able to recycle nitrogen from its own body, breaking down proteins that are plentiful to make other proteins that it needs to survive.

Nitrogen is needed by all plants to survive but the alga's survival strategies vary from most other plants which, when [nitrogen](#) is scarce, tend to widen their search for it.

Like many organisms, the alga – *Ostreococcus tauri* – is also driven by daylight and its body clock – for example, proteins that produce starch for food are active in the evening, after the plant has photosynthesised sugars from sunlight in the day.

The study, in the *Journal of Proteomics*, was funded by the Biotechnology and Biological Sciences Research Council and the Engineering and Physical Sciences Research Council.

Dr Sarah Martin, of the University of Edinburgh, who took part in the study, said: "This tiny alga certainly punches above its weight when it comes to survival. Our study has revealed some curious ways in which the organism finds the nutrients it needs to stay alive – tricks like these could be useful to us in developing sustainable [crops](#) for the future."

Provided by University of Edinburgh

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