Organic nitrogen gives new clue to biodiversity

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Scientists have found that organic nitrogen is more important for plant growth than previously thought and could contribute to maintaining diversity in grasslands.

Until recently it was generally believed that the most important source of nitrogen for plants was inorganic nitrogen. However, researchers funded by the Biotechnology and Biological Sciences Research Council (BBSRC) from the University of Lancaster and the Institute of Grassland and Environmental Research (IGER) have found that not only can organic nitrogen be directly taken up by plants it is also used differently by different species, enabling nitrogen sharing and biodiversity.

By tagging organic nitrogen with stable isotopes researchers have challenged the long held idea that organic nitrogen has to be first converted into an inorganic form before the plants can use it. Their findings have significant implications in unfertilised, low-productivity grasslands where organic nitrogen often appears in greater concentrations than inorganic forms.

Professor Richard Bardgett, lead researcher at the University of Lancaster explained: “This research provides important new information about what happens to organic nitrogen in real ecosystems in real time. Tagging amino acids also revealed that different plant species prefer different sources of organic nitrogen. These preferences may be a way for plants and microbes to avoid competition with their neighbours for

nitrogen when it is in very short supply, effectively enabling them to share nitrogen and maintain biodiversity."

Professor Julia Goodfellow, BBSRC Chief Executive, commented: "This is important work which increases our understanding about the underlying processors that generate and maintain biodiversity and will help farmers, industry and government make the most of natural resources and use biodiversity more effectively."

An interactive exhibition jointly developed by the BBSRC and the National Environmental Research Council (NERC) is touring the UK. Biodiversity: what on earth is it? is currently at the National Museum of Wales until April 23, it then travels to the National Botanic Garden of Wales in May.

Source: Biotechnology and Biological Sciences Research Council (BBSRC)