Fungal Root Endophytes

Benefiting cereal crop yield and performance

Brian Murphy, Trevor Hodkinson, Fiona Doohan

Basic Overview

Researchers
Brian Murphy and Dr. Trevor Hodkinson, from the School of Natural Sciences & Trinity Centre for Biodiversity Research, in collaboration with Fiona Doohan of UCD, have isolated novel species of fungal root endophytes from wild populations of barley species.

Inoculation with the novel endophytes significantly increased grain yield and dry shoot weight in the nutrient-starved barley, and also suppressed the development of pathogenic barley infections.

48M hectares of barley grown globally per annum

What Problem does it Solve

Barley, *Hordeum vulgare* L, is the fourth most important global cereal crop. Like most important monoculture crops, barley is subject to many pathogenic infections.

Growers have used an ever-changing arsenal of chemicals in an effort to control these pathogens. Application of N-P-K fertilisers to barley crops worldwide will be over 4 million metric tons in 2014\(^2\), which represents large economic and environmental costs, with ecosystem degradation and potential losses in biodiversity.

The Opportunity

This research may potentially lead to an eco-friendly, cost effective, sustainable alternative to the existing never-ending cycle of annual fungicidal and fertiliser crop treatments that ultimately result in large cumulative economic and environmental costs.

4M Metric tonnes of N-P-K fertilisers will be applied to barley crops in 2014

$650M Loss in Australia alone due to pathogenic infections in barley

48M hectares of barley grown globally per annum

Patent Status

A priority patent application has been filed with the European Patent Office EP14182893.9

---