High-throughput sequencing of soil nematode communities for ecological research

Xiaoyun Chen (1), Bryan Griffiths (1), Tim J Daniell (2), Roy Neilson (2), Vincent O'Flaherty (3)
(1) Teagasc, Environment Research Centre, Johnstown Castle, Wexford, Ireland;
(2) Scottish Crop Research Institute, Dundee, UK;
(3) Dept Microbiology, National University of Galway, Galway, Ireland.

Introduction
Although nematode community analysis is widely quoted as a useful environmental indicator, a major impediment to its wider adoption is the morphological identification of individual nematodes. Molecular techniques offer an alternative to time-consuming traditional methods of faunal identification based on morphology.

Objective
This study will combine morphological and molecular sequencing to establish the potential for analysing nematode communities by molecular biological characterization.

Experimental Site
To test the methods samples were taken from the Cowlands at Teagasc, Johnstown Castle, Wexford, Ireland. A long-term trial of P fertilisation since 1968. The grassland plots have six P-application treatments with six replications.

Fertilizer P Treatment (kg ha⁻¹ yr⁻¹)

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment No.</th>
<th>P0-0</th>
<th>P0-30</th>
<th>P30-30</th>
<th>P30-0</th>
<th>P15-15</th>
<th>P15-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968-1998</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>30</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>1999-2008</td>
<td>2</td>
<td>0</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

Methods
Nematode extraction

morphological identification

molecular identification (T-RFLP)

18 days to finish

2 days to finish

Conclusion
This Walsh Fellowship project is going to determine if molecular methods can augment morphological identification for soil nematode community analysis.

Acknowledgments
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