

## Profile

### Marcel van der Heijden

#### What inspired your interest in plant science?

Very early in my youth, I was already fascinated by plants and animals, and nature in general. This was encouraged by my mother who is very nature oriented. By 10 years old, I had a large garden and was growing potatoes, onions, beans and many flowers. So, my choice to study biology and ecology at Wageningen University was a logical one. A wide range of teachers, especially Jan van Groenendael and Ab Masselink at Wageningen University, inspired me with their courses and I was fascinated by plant and vegetation ecology. My interest in the mycorrhizal symbiosis, underground ecology and plant ecology in general was sparked by seminal papers and books by David Read, Sally Smith, David Tilman and Phil Grime. I think it is fascinating that plants and mycorrhizal fungi collaborate so successfully and that this symbiosis has such a big impact on plants and the world we see aboveground. During my studies I realized that there was still a lot to discover belowground, and this still holds true today. The development of molecular tools to characterize microbial communities, in combination with various experimental procedures and statistical tools, has revolutionized our ability to peek into the black box below our feet.

#### Why did you decide to pursue a career in research?

I like science and research and I always had very good opportunities to do research and tackle new research questions. I think it is a privilege to be a scientist because we have a lot of freedom and there are so many possibilities for research. I also have a great respect for farmers and people that establish their own companies, who make money by producing goods and services. In the end we rely on them. It is still a tempting idea for me to set up and initiate a company related to sustainable agriculture or contribute to the success of a large company (e.g. as an advisor).

#### What motivates you on a day-to-day basis?

I think science is fascinating and there is always a lot to do. I like the interaction with other people, and to initiate, develop and finish projects.

#### Who do you see as your role model(s)?

I have met a number of fascinating people and role models. These include top scientists and their teams who move(d) their fields forward, including David Read, Sally Smith, Francis Martin, and

#### Box 1



Since 2007, Marcel van der Heijden has headed the Plant–Soil Interactions Group at the Swiss Federal Research Institute Agroscope (Zurich, Switzerland) and he is a professor in Mycorrhizal Ecology at Utrecht University (the Netherlands) and guest professor at the Department of Evolutionary Biology and Environmental Sciences at the University of Zurich. He obtained his PhD in 1999 at the Botanical Institute of Basel University, Switzerland, studying the impact of mycorrhizal fungal diversity on plant diversity, nutrient cycling and ecosystem functioning. His research group performs a mix of basic and applied research, specifically investigating how soil life (including mycorrhizal fungi), and soil biodiversity, influence plant growth and ecosystem functioning. He is also interested in enhancing the sustainability of agro-ecosystems using field inoculation with arbuscular mycorrhizal fungi, plant microbiome management and testing various management options for ecological farming. He has published over 100 scientific papers, including several highly cited papers in *Nature*, *Proceedings of the National Academy of Sciences (PNAS)*, *Ecology Letters* and *New Phytologist*. He has also published over 25 applied papers for environmental engineers, farmers and policy-makers aiming to enhance awareness of the importance of underground mutualisms, soil biodiversity and ecological farming for environmental sustainability. He is a multidisciplinary researcher active in disciplines such as mycorrhizal ecology, ecology, agriculture, biodiversity, molecular ecology, plant microbiome research, plant sciences, plant nutrition, soil sciences, sustainability and environmental protection.

Marcel is a long-standing member of the *New Phytologist* Advisory Board.

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fungal genome sequencing teams, Lynn Margulis, David Tilman and Phil Grime. Moreover, I have been supervised by, and collaborated with, many people who acted as role models for me at various stages in my career – scientists with excellent concepts and ideas, colleagues with excellent social and diplomatic skills, people with humour who like a joke, and managers who set up a good organization. I would like to highlight Willy Kessler and Bernhard Schmid, but there are many others. Generally speaking, I appreciate people with a positive life attitude, who are fair and work hard for something they want to reach and such people act as role models for me on a day-to-day basis. These include many colleagues (scientists, students, technicians, support staff in the laboratory or collaborators at other institutions).

### What are your favourite New Phytologist papers of recent years, and why?

*New Phytologist* is continuously publishing high quality papers and articles in the mycorrhizal research field and plant–microbe interactions especially attract my attention. The early papers by Iver Jakobsen and colleagues (e.g. Jakobsen *et al.*, 1992) influenced me a lot. Other nice papers include one by Björn Lindahl *et al.* (2007), and various papers in the special issue related to the 33<sup>rd</sup> New Phytologist Symposium ‘Networks of power and influence: ecology and evolution of symbioses between plants and mycorrhizal fungi’ (<https://www.newphytologist.org/symposia/33>), that we organized at my institute in Zurich. Also, in recent years there have been several nice papers in *New Phytologist* related to the

ecology and biology of the Mucoromycotina, and their ability to form mycorrhizal associations, notably Field *et al.* (2015) and Orchard *et al.* (2017).

### What is your favourite plant, and why?

I am fascinated by tropical trees and tropical forests. My favourite plant is probably *Plantago lanceolata*, because it is such a nice model plant to work with in the glasshouse and it is well suited for investigating ecological questions related to the importance of arbuscular mycorrhizal fungi and soil biodiversity.

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**Key words:** arbuscular mycorrhizal fungi, plant–soil interactions, Profile, soil ecology, sustainability.



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