

**NAME:**

Jos Raaijmakers

INSTITUTION / FUNCTION:

Head of the Microbial Ecology Department at the Netherlands Institute of Ecology (NIOO-KNAW)

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https://scholar.google.com/citations?hl=nl&user=6-FREKMAAAAJ&view_op=lis...

Short Professional Biography:

2014–PRESENT: Head of Department Microbial Ecology, NIOO-KNAW

2014–PRESENT: Professor Microbial Diversity, IBL, Leiden University, Netherlands

1998–2014: Associate Professor Plant Pathology, Wageningen University, Netherlands

Studies:

BSc Biology, Utrecht University, Netherlands

MSc Biology, Utrecht University, Netherlands

PhD, Plant-Microbe Interactions, Utrecht University, Netherlands

Research interests

Jos Raaijmakers studies the diversity, dynamics and natural functions of micro-organisms associated with plants. He pioneered international plant microbiome research by identifying the microbial consortia and molecular mechanisms involved in disease-suppressive soils. To validate the role and functions of specific plant-associated microbial genera, they contributed to the development of novel bioinformatic tools and discovered several new biosynthetic gene clusters and antibiotic metabolites involved in microbe-plant, microbe-microbe and microbe-protzoa interactions. He initiated the Back-To-Roots research program involving several national and international universities and research institutes in South America, Africa and Asia to elucidate if and how plant domestication has impacted on microbiome assembly and activity. The societal impact of his work is to the design of novel strategies for sustainable food production by activating indigenous beneficial microbes or reintroducing beneficial plant microbes from the centers of origin that were lost during plant domestication (the 'missing plant microbes'). To this end, a major focus of his research program is to unravel the assembly and functions of micro-organisms associated with plants. The assembly of the plant microbiome is studied by comparative metagenome and metabolome analyses of wild relatives of crop plant species and by large scale microbiome and GWAM analyses of Recombinant Inbred Line populations. The functions of the plant

microbiome that are studied in detail are microbial protection of plants against biotic stress (pests, diseases, parasitic weeds) and abiotic stress (drought, salinity).

Jos Raaijmakers is fellow of the Royal Dutch Academy of Arts & Sciences (KNAW), Professor of Microbial Ecology at Leiden University, board member of the graduate school Production Ecology & Resource Conservation. His past and present research program is conducted in an international context with projects in Asia, South America and Africa. He is recipient/coordinator of several large national and international research grants. He published more than 180 articles in peer reviewed scientific journals and was elected in the Top 1% of the most highly cited researchers worldwide. He holds several international patents and works closely with industry (start-ups, medium and large enterprises), including international seed companies and agrochemical industries focused on developing new microbiome-based products.

Relevant Publications:

Raaijmakers J.M. & Kiers T.E. (2022) Rewilding Plant Microbiomes. *Science* (in press)

B.O. Oyserman, S.S. Flores, et al. Raaijmakers J.M. (2022) Disentangling the genetic basis of rhizosphere microbiome assembly in tomato. *Nature Communications* 13, 1-16

Song, C., Jin, K., & Raaijmakers, J. M. (2021). Designing a home for beneficial plant microbiomes. *Current Opinion in Plant Biology*, 62, [102025]

Avalos, M., Garbeva, P., Raaijmakers, J. M. & van Wezel, G. P. (2020). Production of glycine-derived ammonia as a low-cost and long-distance antibiotic strategy by *Streptomyces*. *ISME Journal* 14, 568-583.

Carrión, V. J., et al. & Raaijmakers, J. M. (2019). Pathogen-induced activation of disease-suppressive functions in the endophytic root microbiome. *Science* 366, 606-612.

Etalo, D., Jeon, J-S., & Raaijmakers, J. M. (2018). Modulation of plant chemistry by beneficial root microbiota. *Natural Product Reports*, 35:398-409.

Perez Jaramillo, J. E., Mendes, R., & Raaijmakers, J.M. (2016). Impact of plant domestication on rhizosphere microbiome assembly and functions. *Plant Molecular Biology*, 90:635-644.

Raaijmakers, J. M., & Mazzola, M. (2016). Soil immune responses. *Science*, 352: 1392-1393.

Medema, M. H., et al. Raaijmakers J.M. et al. Glockner F.O. (2015). Minimum Information about a Biosynthetic Gene cluster. *Nature Chemical Biology*, 11: 625-631.

Philippot, L., Raaijmakers, J. M., Lemanceau, P., & Van der Putten, W. H. (2013). Going back to the roots: the microbial ecology of the rhizosphere. *Nature Reviews Microbiology*, 11:789-799.

Mendes, R., et al. & Raaijmakers, J. M. (2011). Deciphering the rhizosphere microbiome for disease-suppressive bacteria. *Science* 332:1097-1100.