



Philip Charles Brookes, 23 March 1951 to 28 September 2023

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Philip C. Brookes from Berkeley, Gloucestershire, UK, received his PhD for research into the mineral nutrition of British oak species from Lanchester Polytechnic (now Coventry University) in 1976. Then, he was appointed at the Chemistry Department of Rothamsted Experimental Station where he later joined the group of David Jenkinson and David Powlson. There, Phil developed a method to measure soil microbial biomass phosphorus (MBP) in 1982 by chloroform fumigation-extraction (FE). This approach was extended to measure MBN in 1985 and finally to MBC in 1987. Due to the detection of stabilized, but ethanol-free chloroform and the development of advanced C and N analysis for saline soil extracts, FE has become a simple and robust chemical procedure for the complex assemblage of soil microorganisms as a single entity termed the soil microbial biomass, by quantifying the microbiological pools of major nutrients, allowing their accounting into biogeochemical models. Phil and his colleagues left us methods that opened new possibilities for many soil scientists to work on various soil microbiological objectives. The FE approach is nowadays the most widespread method for measuring soil microbial biomass and for this reason, and the relevant paper by Vance et al. (1987), now approaching 10.000 citations in SCOPUS, is the most highly cited scientific paper in soil biology, so that Phil was a highly cited author with a publication list of nearly 300 papers in international refereed scientific journals. In addition to the fundamental methodological work, Phil pursued with the same vivid imagination his interests on the relationships of soil microorganisms to

soil fertility and soil pollution, on P leaching from soil and on the energy balance of soil microorganisms, which led Phil to analyse the adenylate energy charge (AEC) in soil.

For several decades, Phil attracted a great number of talented graduate students and post-doctoral workers from all over the world, especially from Italy, Germany, Japan, Canada, USA, India, Africa, and China to work with his group at Rothamsted. After his retirement from Rothamsted in 2011, Phil enjoyed a new career at the Institute of Soil and Water Resources and Environmental Sciences, Zhejiang University, Hangzhou, China until 2019. He held Honorary Professorships at Coventry University, UK, and the Universities of Zhejiang, Hunan, Beijing, Jangling and Changsha in China, and several appointments as distinguished fellow of International Research Organizations. Everywhere, Phil inspired many students through his teaching and enthusiastically talking science.

When not researching and writing influential papers, Phil was fishing for wild Irish brown trout in the beautiful Lough Mask with his friends from Ballinrobe, Ireland, where he lived after his final retirement in a small cottage together with several bee colonies.

We all will miss Phil.

Rainer Georg Joergensen, Kazuyuki Inubushi, Giancarlo Renella

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