Prof. Dr. Nobuhiro KANEKO

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“One Straw Revolution” revisited - No-till trials in Japan"

Conservation agriculture is a farming management with a combination of 1) no or minimum tillage, 2) permanent soil cover by plants or organic matter and 3) crop diversification is rapidly expanding globally. Masanobu Fukuoka, the author of “One Straw Revolution”, started similar management in the 1950s. There are some other outstanding farmers who practiced a kind of conservation agriculture; low input, minimum disturbance and high biodiversity. However, the adoption of this method is very much limited, and there has been no support from science in Japan. Recent advances in soil ecology are now starting to support conservation agriculture. The Monsoon climate in East Asia encourages weed growth during summer, thus controlling competition with weeds is crucial. Fukuoka and many farmers tried to include weeds as part of their farming system. The biodiversity-ecosystem functioning theory suggests that plant species diversity promotes primary production. therefore, in theory, multiple ecosystem functions will be expected in Fukuoka's management. A multifunctional approach is a key to studying Fukuoka's legacy system in Japan.

CV

Nobuhiro Kaneko is currently a professor of agriculture and food science at Fukushima University, before that he worked as a professor of soil ecology at Yokohama National University. He gained his PhD. degree in forest ecology at Kyoto University. He studied the life cycles and community structures of oribatid mites, and their effects on litter decomposition in a beech forest. After he moved to Shimane University, he focused on nutrient cycling in coppice and slush-burn forests in western Japan. He studied fungal-invertebrate interactions at University Calgary and he also did ecological risk analysis on soil contamination at Vrjie University, Amsterdam. Effects of the periodical millipede as a soil ecosystem engineer are his life-long study. Soil biodiversity and ecosystem functioning in "natural farming (ultimate conservation agriculture)" is his current study theme. He is proposing biological decontamination of forest soil polluted by radio-caesium after Fukushima nuclear plant accident. He serves as a chairperson of Japanese Society of Soil Zoology since 2020, and a Scientific Advisory Committee Member of Global Soil Biodiversity Initiative (https://www.globalsoilbiodiversity.org).

Expertise

Soil ecology, Biogeochemistry of forests

Current Research Topics

Soil biodiversity and ecosystem functioning in conservation agriculture

Ecological decontamination of radio cesium from forest soil

Professional History

Professor, Faculty of Food and Agricultural Sciences, Fukushima University (2018-present)
Professor, Graduate School of Environment and Information Sciences, Yokohama National University (2001-2018)
Associate Professor, Institute of Environmental Science and Technology, Yokohama National University (1998-2001)
Associate Professor, Faculty of Life and Environmental Science, Shimane University (1995-1998)
Associate Professor, The United Graduate School of Agricultural Sciences, Tottori University (1994-1998)
Visiting Scientist at University of Calgary (Prof. Dennis Parkinson) (1991-1992)
Associate Professor, Faculty of Agriculture, Shimane University (1990-1995)
Assistant Professor, Faculty of Agriculture, Shimane University (1985-1990)

Educational History

Doctor of Agriculture, Kyoto University, Kyoto, JAPAN (1988)
Master of Agriculture, Kyoto University, Kyoto, JAPAN (1983)
Bachelor of Agriculture, Kyoto University, Kyoto, JAPAN (1981)

Selected Publications

Takenaka, C., Hijii, N., Kaneko, N., Ohkubo, T. (Eds.), 2019. Radiocesium Dynamics in a Japanese Forest Ecosystem. Springer Singapore, Singapore. doi:10.1007/978-981-13-8606-0
Philips H R. P. ,,,,, N,. Kaneko,,,,, Eisenhauer N., Global distribution of earthworm diversity. Science 366 480-485, 2019
Tsunoda T, Makoto K, Suzuki J.-I, Kaneko N., Warming increased feeding of a root-chewing insect at the soil surface and enhanced its damage on a grass. Soil Biology and Biochemistry 126 213-218, 2018
Arai M, Miura T, Tsuzura H, Minamiya Y, Kaneko N., Two-year responses of earthworm abundance, soil aggregates, and soil carbon to no-tillage and fertilization. Geoderma 332 135, 2017
Miura T, K. Makoto, S. Niwa, N. Kaneko, K. Sakamoto. Comparison of fatty acid methyl ester methods for characterization of microbial communities in forest and arable soil: Phospholipid fraction (PLFA) versus total ester linked fatty acids (EL-FAME). Pedobilogia 63 14-18, 2017
Nishijima S, Furukawa T, Kadoya,T, Ishihama F, Kastner T, Matsuda H, Kaneko N. Evaluating the impacts of wood production and trade on bird extinction risks. Ecological Indicators 71 368-376, 2016
Makoto K., Minamiya,Y Kaneko N.,Differences in soil type drive the intraspecific variation in the responses of an earthworm species and, consequently, tree growth to warming. Plant and Soil 404(1-2) 209-218, 2016
Miura T, Niswati S, SwibawaI. IG. Haryani S, Gunito H, Arai M, Yamada K, Shimano S, Kaneko N, Fujie, K., Shifts in the composition and potential functions of soil microbial communities responding to a no-tillage practice and bagasse mulching on a sugarcane plantation. Biology and Fertilities of Soils 52(3) 307-322, 2016
Miura, T Owada K, Nishina K, Utomo M, Niswati A, Kaneko N, Fujie K.,The Effects of Nitrogen Fertilizer on Soil Microbial Communities Under Conventional and Conservation Agricultural Managements in a Tropical Clay-Rich Ultisol. Soil Science 181(2) 68-74 Feb, 2016
Huang Y, Kaneko N, Nakamori T, Miura T, Tanaka Y, Nonaka M, Takenaka C., Radiocesium immobilization to leaf litter by fungi during first-year decomposition in a deciduous forest in Fukushima. Journal of Environmental Radioactivity152 28-34, 2016

Awards

Award of Japanese Society of Soil Zoology (2004)

Encourage award for young scientist of Japanese Society of Soil Zoology (1992)

Editorial Boards
Editor-in-Chief for Edaphologia (Japanese Society of Soil Zoology)(2004-2008)
Pedobiologia (Elsevier) (1997-2012)
TROPICS (Japanese Society of Tropical Ecology) (2001-2005)
Journal of Forest Research (Japanese Society of Forest Science) (2004-2008)
Ecological Research (Ecological Society of Japan) (2004-2008, 2011-2015)