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How diversifying forests could increase China's carbon storage potential

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报告人简介

Bernhard Schmid started his ecological career working on the life history of *Carex flava* for his PhD at the University of Zurich. He then moved on to post-doctoral research with two of the leading plant population ecologists of the time, John Harper in Bangor, Wales and then Fakhri Bazzaz at Harvard. He returned to Switzerland as Professor of Conservation Biology at the University of Basel before being appointed Professor of Environmental Sciences at the University of Zurich. He is also an adjunct Professor at Peking University, China. Bernhard has conducted groundbreaking research in several areas of plant ecology, most notably on the population ecology of clonal plants, mechanisms of competition, community assembly, and more recently on biodiversity–ecosystem functioning relationships. Research pioneered by Bernhard has proved that ecosystems with higher genetic or species diversity are more productive, more efficient and more stable in the face of environmental changes. This discovery countenances for movement away from the dominant use of less diverse systems and monocultures in agriculture and forestry, and towards management for high combining ability among genotypes and species. Specific research outcomes include: species-rich grasslands have increased productivity and soil fertility if species with high combining ability are used, breeding and genetic engineering for high combining ability among genotypes can break yield stagnation in major crop plants, planting mixed-species forests instead of monocultures can double the amount of fixed carbon per area, and managing for biodiversity provides spatial and temporal insurance for agro- and forest ecosystems.

报告摘要

In this talk, Bernhard will report results from the BEF-China main experiment and comparative study plots. The global carbon potential of forest restauration has been estimated at 44 or 226 gigatons in 2023. The enormous difference between the two studies may at least partly be due to positive effects of species mixtures not explicitly considered in the estimates. Extrapolating results from BEF-China, replacing monocultures extending across 1,000,000 km^2 by mixtures of five species could increase China's carbon stock by up to 5.6 gigatons.

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