

Algemene informatie

Titel (Nl.)	De functionele rol van boomsoortendiversiteit beoordelen: het FORBIO experiment
Title (En.)	Assessment of the functional role of tree diversity: the multi-site FORBIO experiment
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Keywords (En.)	Forest ecology, forest management, biodiversity-ecosystem functioning research, tree diversity, mixed forest, field experiment

Deze studie beschrijft de opzet van het FORBIO-veldeperiment in België, met 1 site in Pijnven (Bosland), dat deel uitmaakt van een globaal netwerk van boomdiversiteitsexperimenten (TreeDivNet).

Samenvatting (Nederlands)

Functioneel biodiversiteitsonderzoek ondersteunt de hypothese dat meer biodiverse ecosystemen meer en betere ESD zouden leveren (BEF hypothese). Dit onderzoek zal op empirische wijze de impact van bosbiodiversiteit (BD) op de functionaliteit van het bosecosysteem (ES) aantonen.

Het grootschalige FORBIO experiment (FORest BIODiversity and Ecosystem Functioning) is ontworpen om dit effect te testen. Het FORBIO experiment bestaat uit een gelijkaardige proefopstelling op 3 verschillende sites in België (Zedelgem, Hechtel-Eksel en Gedinne) met verschillende edafische (grondgebonden) en klimatologische kenmerken. De plots (41-44 per site) zijn aangeplant met monoculturen en samenstellingen tot 4 verschillende boomsoorten, allen geselecteerd uit een pool van 5, voor de site geschikte, functioneel verschillende boomsoorten. Het monitoren van de functionaliteit van het ES zal inzicht geven in de relaties tussen BD en ES functionering, die bijzonder waardevol zijn voor zowel de wetenschap als de praktijk.

Summary (English)

Context – During the last two decades, functional biodiversity research has provided strong support for the hypothesis that more biodiverse ecosystems have the potential to deliver more and better services. However, most empirical support for this hypothesis comes from simple structured communities that are relatively easy to manipulate. The impact of forest biodiversity on forest ecosystem functioning has been far less studied.

Experiment design – In this paper, we present the recently established, large-scale FORBIO experiment (FORest BIODiversity and Ecosystem Functioning), specifically designed to test the effects of tree species diversity on forest ecosystem functioning. FORBIO's design matches with that of the few other tree diversity experiments worldwide, but at the same time, the FORBIO experiment is unique as it consists of a similar experimental set-up at three sites in Belgium (Zedelgem, Hechtel Eksel and Gedinne) with contrasting edaphic and climatological characteristics. This design will help to provide answers to one of the most interesting unresolved questions in functional biodiversity research, notably whether the effects of complementarity on ecosystem functioning decrease in less stressful and more productive environments. At each site, FORBIO consists of 41 to 44 plots (127 plots in total) planted with monocultures and mixtures up to four species, selected from a pool of five site-adapted, functionally different tree species. When allocating the treatments to the plots, we maximally avoided any possible covariation between environmental factors. Monitoring of

ecosystem functioning already started at the Zedelgem and Gedinne sites and will start soon in Hechtel-Eksel. Multiple processes are being measured and as the trees grow older, we plan to add even more processes.

Expected results – Not only basic science, but also forest management will benefit from the results coming from the FORBIO experiment, as FORBIO is, for instance, also a test case for uncommon, not well-known tree species mixtures. To conclude, FORBIO is an important ecosystem experiment that has the potential to deliver badly needed insights into the multiple relationships between biodiversity and ecosystem functioning, which will be valuable for both science and practice.