

Interactive comment on “Biodiversity for multifunctional grasslands: equal productivity in high-diversity low-input and low-diversity high-input systems” by A. Weigelt et al.

A. Weigelt et al.

alexandra.weigelt@uni-jena.de

Received and published: 27 May 2009

We fully agree that completely unmanaged sites would transform into scrubland on both, unfertile and fertile soils over time. However, our mentioning of nutrient-poor and highly diverse sites in the paper is not intended as direct comparison for our own results, but rather as a reference to agricultural reality. The soil of the Jena Experiment field site is classified as Eutric Fluvisol which developed from up to 2 m-thick loamy fluvial sediments. It is relatively nutrient-rich and had been used as arable field for at least 40 years prior to the establishment of the experiment in 2002. The key point of our study is to quantify the exclusive effects of either species richness or management

C542

intensity on the productivity of grasslands growing on one soil and under equal abiotic conditions. Ideally, the whole design should be replicated on different soils and under otherwise different abiotic conditions to enable a more general translation of our experimental findings to the large variety of managed field sites, but that is unfeasible. It is important to note, however, that a comparison using semi-natural grasslands differing in species richness could not separate the effects of abiotic conditions and plant species richness and would thus test a different hypothesis. We created grasslands with increasing plant species richness by random sampling from a 60-species pool and artificial weeding. Our results therefore hold for a wide variety of species compositions and diversity levels. Fertilizing these plots leads to continuous species loss as would be expected from long-term agricultural experience and thus reduces the experimental diversity gradient. After several years, plots with fertilizer input will differ in plant species richness and composition from plots without fertilization and an unequivocal separation of richness versus management effects would be obviated.

Interactive comment on Biogeosciences Discuss., 6, 3187, 2009.

C543