

Sommersemester 2010

 Gebäude GEO I
Hörsaal H6

BayCEER Kolloquium

Vortragsreihe Ökologie und Umweltforschung

Donnerstag 22.07.2010, 16:15 Uhr, H6

Anschließend Postkolloquium mit Bier und Brezeln im Foyer H6

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Ecosystem response to fertilizer application in grasslands: what can tell us long-term experiments?

Organic as well as mineral fertilizers were used for centuries to improve quantity and quality of forage produced on permanent grassland. In many regions, application of organic fertilizers on farm land resulted in creation or in enlargement of oligotrophic plant communities highly valued by nature conservation today. Industrial production of synthetic fertilizers started in the middle of the 19th century and since that time, long-term fertilizer experiments were established. Ten grassland experiments at least 40 years old are still running in Austria, Czech Republic, Germany, Great Britain, Poland and Slovakia.

Our findings demonstrate that short and long-term effects of fertilizer application on plant species composition differ substantially. In contrast, short-term experiments cannot be used to predict long-term effects. Residual effect of fertilizer application differs substantially among individual types of grassland and nutrients applied. Decades long after-effects of Ca and P application were revealed in alpine grasslands under extreme soil and weather conditions decelerating mineralization of organic matter. At lower altitudes with less extreme soil and climatic conditions, residual effect of fertilizer application is generally substantially shorter. From the comparison of long-term vs short-term nutritional effects, it was concluded that long-term fertilizer experiments are irreplaceable as many existing models and predictions can be validated only by means of long-term manipulation of plant communities and their continuous observation and documentation. In conclusion, I will give examples of how to apply forward-looking grassland research on existing long-term experiments and explain the extraordinary value that is provided by plant-soil-environment equilibrium.

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