

ROTHAMSTED RESEARCH

HARPENDEN,
HERTFORDSHIRE AL5 2JQ, UK

14. Jún 2010 – 17. September 2010



An aerial photograph of the Rothamsted Research farm. The image shows a large area of agricultural land divided into numerous rectangular experimental plots, some of which are green and others brown. In the upper left, there is a cluster of farm buildings with dark roofs. The surrounding landscape is a mix of green fields and some trees.

ROTHAMSTED RESEARCH

- najstaršie výskumné centrum poľnohospodárske na svete
- najväčšie výskumné centrum vo VB
- prvé experimety, ktoré sú dodnes zachované siahajú od roku 1843 a boli založené Lawesom a Gilbertom
- vedecký výskum sa zameriava na štúdium genetiky, biochémie, molekulárnej biológie a pôdnych procesov na štúdium agroekosystémov a krajinnej štruktúry

najstaršie long – term experimenty

THE BROADBALK EXPERIMENT


This experiment is the oldest continually running field experiment in the world. It was set up in 1843 to study the impact of different fertiliser regimes (inorganic and manures) on wheat yields and soil health. In the experiment's early days it was ploughed by teams of horses and harvested by hand. Today, the experiment is used by scientists to investigate plant nutrition, nitrogen cycling and much more.

Sections 0, 1, 6, 8 & 9 of the field are sown continuously with wheat and sections 2, 3, 4, 5 and 7 have wheat grown in rotation with other crops. Section 0 has wheat straw incorporated into the soil. Fungicides and insecticides are withheld from row 7. Weedkillers are withheld from row 8 and this row hosts poppies, mayflowers and the occasional rare plant, such as corn cleaver. The plots receive various fertiliser treatments including Farmyard manure (FYM), no fertilisers (nil) and full nutrients (all).

Crop and soil samples have been kept from this experiment throughout, creating an archive that is unique in the world. Scientists are using Rothamsted samples for the evidence they provide of air pollution, global warming and even nuclear testing in Nevada.

In 1882, the far end of the field was left to compete with the weeds. Within four years all the wheat was gone. The left hand side, which has been left untouched, is now mature woodland, Broadbalk Wilderness. The other sections have bushes grubbed out or are grazed by sheep and have developed distinctive flora.

Find out more about Rothamsted and its long term experiments at www.rothamsted.ac.uk



Broadbalk Wilderness

Broadbalk from the air

The Soil Archive

Sampling nitrogen on Broadbalk



The Park Grass Experiment

The oldest ecological experiment in existence

John Bennet Lawes and Joseph Henry Gilbert established the Park Grass experiment in 1856 to investigate how fertilisers might be used to improve hay yields. However, it soon became apparent that the treatments were also affecting biodiversity on the plots, and the ecology of the experiment has been studied (along with hay yields and soil health) ever since.

The field is divided into plots, which receive either organic manures, various combinations of inorganic fertilisers or no fertiliser at all. Each plot is divided into four sub-plots, which receive different amounts of lime to control the acidity (caused by some of the fertilisers and by acid rain). Hay is made from the plots in early summer and in the autumn.

Archived seeds from Park Grass, 1879

Harvesting Park Grass in 1941

Plant and soil samples have been taken from the experiment since its inception. Scientists have used this unique archive to track environmental change over the past 150 years. For example, analyses of plant samples show the build-up of pollutants such as lead and dioxins in the environment. The experiment is now part of the UK Environmental Change Network.

In the spring, the experiment is a colourful tapestry of flowers and grasses. Unfertilised plots can have as many as 35-45 plant species. This is probably representative of the biodiversity of most meadows in this area several hundred years ago. Fertilised plots produce higher hay yields but contain fewer species. Park Grass has been running long enough for the genetics of plants on the different plots to have diverged - one of the first demonstrations of local evolution in action.

Please do not enter Park Grass field and risk damaging this unique and historic experiment. To find out more about Rothamsted and its history, visit www.rothamsted.ac.uk







Different manure and fertiliser treatments

Different liming treatments

Sorting seeds from Park Grass in the 1920s

ROTHAMSTED RESEARCH

Rozdelený na niekoľko odborov:

1. Applied Crop Science
2. Biomathematics and Bioinformatics
3. Biological Chemistry
4. Grassland System Science
5. Plant and Invertebrate Ecology
6. Plant Pathology and Microbiology
7. Plant Science
8. **Sustainable Soils and Grassland Systems**

Sustainable Soils and Grassland Systems

- zamerané na štúdium kolobehu živín v pôde a plodinách, ochrana pôdy a jej remediácia a sledovanie dynamiky uhlíka
- vývin nových praktík na minimalizáciu environmentálneho znečistenia, biodostupnosť polutantov, ovplyvnenie klimatických zmien, sekvestrácie uhlíka, fytoremediáciu pôdy
- rôzne pracovné skupiny v rámci departmentu – SOIL MICROBIAL BIOMASS group

SOIL MICROBIAL BIOMASS group

- group leader – prof. Philip Brookes (philip.brookes@bbsrc.ac.uk)
- line manager – Rhys Ashton (rhys.ashton@bbsrc.ac.uk)
- výskum je zameraný na objasnenie roly mikrobiálnej biomasy v pôde, porozumenie jej funkcií ktorú predstavujú a antropogénne dopady na jej funkciu v pôde
- autori mnohých významných metodík používaných na stanovenie pôdnej mikrobiálnej aktivity

moja práca:

- sledovanie zmien obsahu ATP a uhlíka pôdnej mikrobiálnej biomasy pri rôznej teplote zmrazenia (-20°C , -80°C) a jej dĺžky trvania (24 hod., 7 dní, 20 dní)
- stanovenie obsahu ATP vo vzorkách vlastných stanovišť – orná pôda a TTP (Liptovská Teplička a Plavnica)
- stanovenie a úprava pôdnej vlhkosti a WHC (zadržiavacia schopnosť pôdy) na stanovenie mikrobiálnych analýz

ROTHAMSTED MANOR

- postavený v 17. storočí
- ubytováva študentov a výskumníkov z celého sveta (46 host'ov v 36 izbách)
- okrem samotného ubytovania poskytuje raňajky a večere počas celého týždňa, možnosť využiť priestory s TV, DVD, biliardom, stolným tenisom, šípky a možnosť využívania pracovne



voľnočasové aktivity

- výlety do blízkeho okolia – Londýn, Oxford, Cambridge, atď.
- športové aktivity organizované výskumným centrom
- blízkosť športového centra a plavárne
- návšteva knižnice
- možnosť využívania Rothamsted posilňovne a tenisových kurtov

Pozitíva a prínos stáže:

- nadobudnutie nových pracovných skúseností, vedomostí a zručností
- zlepšenie a každodenné praktizovanie jazykových znalostí
- spoznanie nových odborných metodík
- stretnutie a konzultácia s odborníkmi pracujúcimi v oblasti pôdnej ekológie
- nové priateľstvá a spoznávanie ich kultúry

negatívna stáž:

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ĎAKUJEM ZA PRÍLEŽITOSŤ BYŤ
SÚČASŤOU TOHTO ÚŽASNÉHO
PROGRAMU 😊

Ing. Lenka Bobul'ská