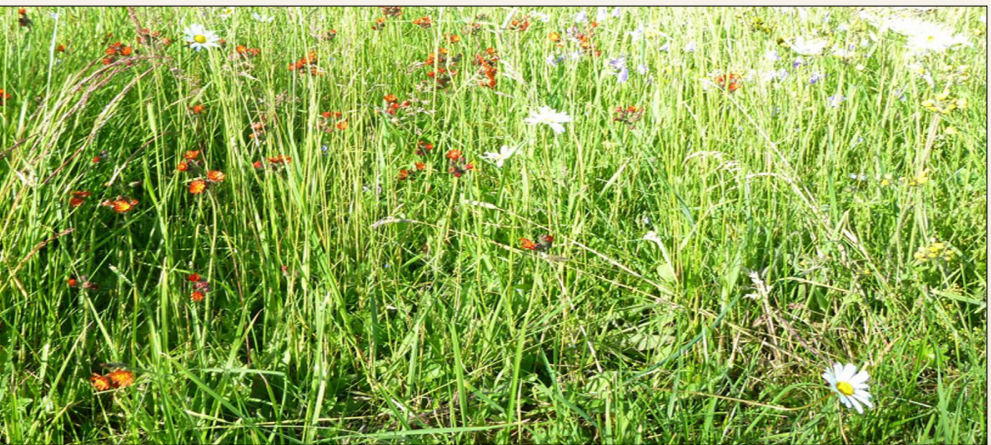


Field lysimeters

Lysimeters provide detailed information on water regime, including the balance of dissolved chemical substances in the soil profile in different climatic and soil conditions. There is a network of sites with different water percolation for evaluation of nutrient loss by percolation, deposition of nutrients into the soil by rainfall, translocation of mineral nitrogen in different depths and times and crop yields. As regards the balance of nutrients, especially the dynamics of nitrate and ammonium nitrogen in soil is evaluated and the losses during the winter period are summarized. Multiple lysimeters in the local network evaluate the rate of penetration of nitrate and ammonium forms of nitrogen, as well as P, K, Ca, Mg, pH and SO_4^{2-} after the application of organic fertilisers – depending on rainfall and depth of soil.

To the four lysimeters at testing station in Hradec nad Svitavou belong experimental plots with red clover, which are fertilised with slurry and digestate in balance rate of 40 kg N/ha.

Slurry is applied separately and also mixed with nitrification inhibitor called Piadin. Collection pots in lysimeters are located in three horizons: 40, 60 and 80 cm.



Registration and notification of fertilisers

Department of Fertilisers is responsible for the administrative procedures in the field of fertilisers according to Act No. 156/1998 Coll. on fertilisers. Main task of the department is the registration and notification of fertilisers and supplementary substances which are placed on the Czech market. The department also keeps records about fertilisers and supplementary substances which are placed on the market in compliance with the European legislation – so called mutually recognized products and EC FERTILISERS.

The results of the above mentioned activities are especially:

- The consumer has a kind of proof that fertilisers and supplementary substances conform to declared quality and do not contain hazardous elements in excessive amount.
- All fertilisers and supplementary substances bear a label (or a leaflet at bulk products) where consumer is in detail informed about the characteristics of fertilisers and supplementary substances, the range and the method of use, including warning about potential dangerous properties.
- The consumer has access (via Register of fertilisers published on the Internet) to general information on assortment of fertilisers and supplementary substances offered in the Czech Republic.

Official control of fertilizers

Official control is coordinated by the Department of Fertilisers – the aim of the controls is to check the compliance with the legislation in force in the field of fertilisers including finding fertilisers and supplementary substances illegally placed on the market. The Division of Agricultural Inputs Control carries out supervision pursuant to Act No. 156/1998 Coll. on fertilisers in following areas:

- Placing fertilisers and supplementary substances on the market.
- Storage of fertilisers and supplementary substances.
- Usage of fertilisers and supplementary substances.
- Keeping records of usage of fertilisers and supplementary substances, treated sludges and sediments.
- Usage of treated sludges in agriculture in vulnerable areas – Government Regulation No. 262/2012 Coll.
- Sampling of fertilisers and supplementary substances for purposes of assessment of observance of quality parameters and limits of hazardous elements at their placing on the market.



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CENTRAL INSTITUTE FOR SUPERVISING AND TESTING IN AGRICULTURE PLANT NUTRITION



Agrochemical testing
of agricultural soils

Field and pot vegetation
experiments

Registration and notification
of fertilisers

Official control of fertilisers

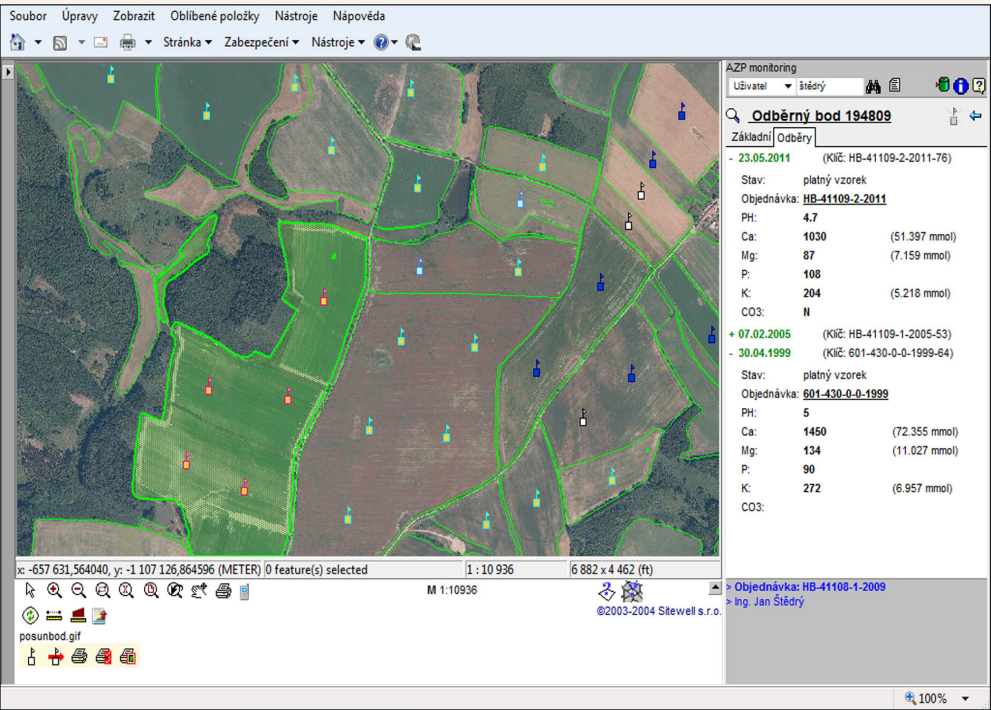
FERTILISERS AND SOIL

Agrochemical testing of agricultural soils (AZZP)

Since 1961 ÚKZÚZ has been performing agrochemical testing of agricultural soils in six-year cycles in order to check the status of available nutrients, soil reaction and the need of liming for agricultural practices. Since 1999 AZZP is performed according to the Act No. 156/1998 Coll. on fertilisers. The basic chemical analyses are the determination of exchangeable soil reaction, carbonate content and available nutrients. Since 1999 it has been introduced to determine the accessible P, K, Mg and Ca by using the method of Mehlich III.

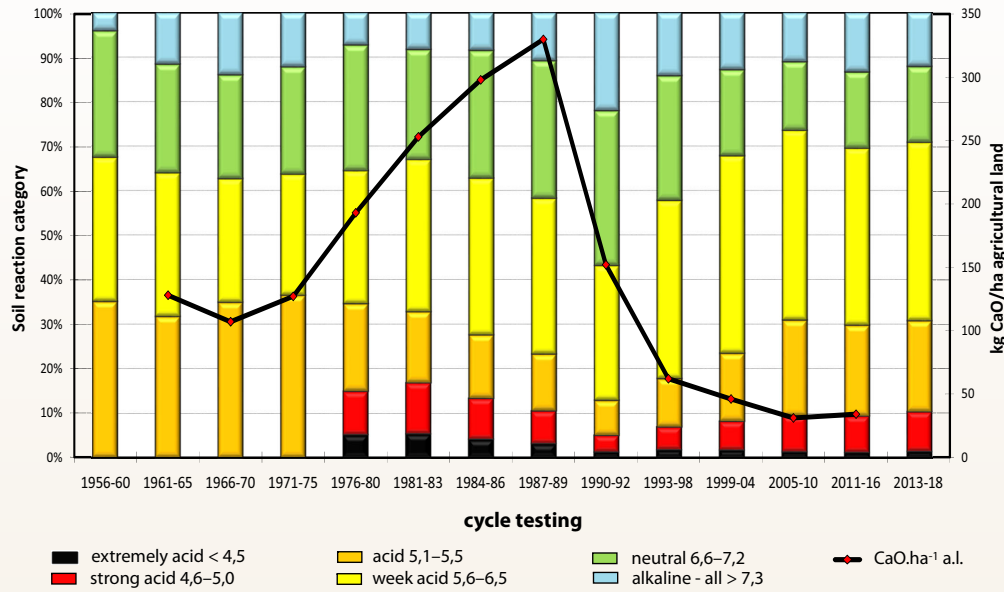
The basic soil properties are evaluated separately for arable land, permanent grassland, vineyards, intensive orchards and hop gardens. The AZZP of permanent grasslands finished in the end of year 2013.

Since 2006 the organization of AZZP (including evaluation of results) is done through the LPIS – Land Parcel Identification System, which according to Act No. 252/1997 Coll. on agriculture is managed by the Ministry of Agriculture of the Czech Republic. Farmers have access to the results of AZZP in LPIS via eAGRI portal www.eagri.cz, in the module “Farmer's portal”. Data are published in the form of graphic and text information.



The AZZP results are processed into statistical summary reports for the needs of national and regional agricultural policies. Table summaries are sorted by territorial units: Czech regions and districts.

Changes in soil reaction in agricultural soils and consumption of calcium matter



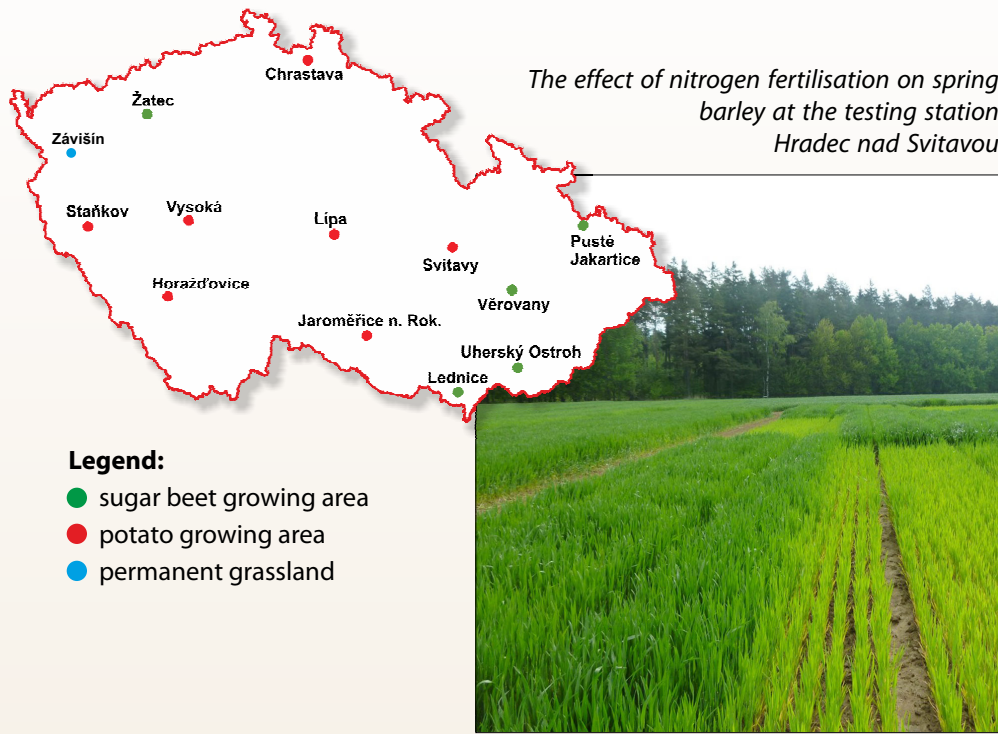
Field experiments

Long-term field experiments are focused on gaining more knowledge about different fertilisation systems. The aim is to determine the effect of organic and mineral fertilisers and crop on yield, production quality and soil properties, including balancing nutrients - input and output of them.

ÚKZÚZ performs the following experiments:

- **Monitoring of the impact of intensified rate of fertilisation on crop yields and agrochemical properties of soil** – since 1972, 12 combinations of treatments involve organic and intensified mineral fertilisation and liming.
- Since 1994 **systems of organic fertilisation** verify the minimization or complete omission of fertilisation with mineral fertilisers in order to demonstrate a possible replacement by natural organic fertilisers and compare the relative effectiveness.
- **The impact of grassland management on production, forage quality and soil properties** is studied in Závěšín since 1969. The experiment is focused on long-term observation of productivity, botanical composition and quality of forage and soil properties under permanent grassland.
- **The comparison of effectiveness of digestate and different types of fertilisers by farming in vulnerable areas** – observed is the influence of products of anaerobic fermentation, manure and compost on quality and yield of crops, and also their Impact on agrochemical and physical soil properties.
- **Verification of effects of gradually increased doses of nitrogen by constant level of phosphorus and potassium** on changes of nitrogen in soil, yields, quality of products and productivity of crop rotation.

Location of long-term field experiments in the Czech Republic



Pot vegetation experiments

These experiments are set up as one year or multi-annual experiments to obtain or verify the information for registration of non-type fertilisers and supplementary soil substances in accurate controlled specific conditions of soil, fertilising and watering in the vegetation hall or greenhouse. They are also conducted for the assessment of less common materials, such as ashes from biomass, animal meal, etc.



Pot experiments, vegetation hall of ÚKZÚZ Brno