

## **Impact of soil and weather conditions on yield and quality of different *Lolium perenne* varieties**

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Perennial ryegrass (*Lolium perenne*) is a very valuable and globally widespread forage grass. The yield and quality characteristics of *L. perenne* depend on its growth conditions, such as soil and weather conditions. The objective of this study is to determine which soil- or weather parameters can best explain the yield and nutritive values and how they interact with different *L. perenne* varieties.

From 2017 to 2019, field trials were carried out at 14 locations with 10 *L. perenne* varieties in cooperation with breeders and state institutes, as well as the Federal Plant Variety Office. In addition to yield data, the quality parameters (e.g. crude protein, crude fibre, WSC etc.) of all plant samples were determined by NIRS measurement. We present here the data of the first cut of 2017. Mixed effects model was applied to analyze the influences of soil and weather conditions on yield and various quality characteristics of *L. perenne*. The results showed significant influences of average temperature (T), accumulated precipitation of the growth period (NS), and field index on dry matter yield (DM). The DM increased linearly with T, while it showed an optimum curve with NS. Strong relationships of T and NS with nutritive values were also found for crude protein (CP), crude fibre (CF), and water soluble carbohydrates (WSC). However, they were also affected by further parameters, such as P<sub>2</sub>O<sub>5</sub> content, field index, and humus level in soil. The next steps will be the statistical analysis and interpretation of the complete data set.