

# Comparison of different lettuce (*Lactuca sativa* L.) varieties and their quality parameters in three different locations in Lower Saxony

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Lettuce is an annual or biennial plant that is consumed worldwide. In Germany, it is very popular, because of its high content of water, and dietary fiber and its availability throughout the year. However, several of these varieties are negatively affected by the consumer acceptance, because of a high number of bitter compounds in these plant extracts, for example lactucin. In the summer of 2017, we conducted field experiments in three different locations in Lower Saxony (Seevetal, Cappeln, and Göttingen). In each experiment, five leaf lettuce varieties (radicchio, endive, red oak leaf, fri-see, and iceberg) were planted with six biological replications. Four of the five varieties were chosen based on a self-implemented consumer survey, rating the most bitter lettuce types known. Iceberg was chosen as a non-bitter lettuce. In general, to characterize some of the important quality traits, the distribution of

mineral content, total phenolics and nitrate were estimated. Furthermore, the color of the lettuce was measured with a non-invasive method called 'Electronic Eye' (Iris, Alpha MOS Company, France). The aim of the analyses was to verify the differences in the varieties (variety effects) and additionally, to find the general location effects, for example, in the distribution of the ingredients. The first results showed a significant difference between the potassium and magnesium content in each variety, even between the locations. The same results are shown in nitrate and in the content of total phenolics. Furthermore, the results of the color displayed a significant difference between the different locations. These results should be verified in the course of a second field experiment (2018) to determine a possible correlation between the nutritional composition and the color data set.