

## **Abstract**

Biogenic volatile organic compounds (BVOC) serve many physiological and ecophysiological functions in plants, e.g. abiotic or biotic stress protection or signalling. Emission capacity and spectrum of emitted BVOC vary between plant species. Isoprene, having the highest global annual emission among all BVOC, has considerable influence on atmospheric chemistry and its processes. Isoprene contributes to secondary organic aerosol formation. Under specific conditions reaction of isoprene and  $\text{NO}_x$  may lead to ground-level ozone formation. Isoprene also affects oxidative capacity of the atmosphere. Oil palm (*Elaeis guineensis* Jacq.) is a rapidly expanding crop and it is a strong isoprene emitter. Most of the global cultivation of oil palm is located in a relatively small region in southeast Asia posing a risk to regional air quality. To prevent ground-level ozone formation, keeping ground-level  $\text{NO}_x$  concentrations low in the regions of oil palm cultivation is crucial. Models of global isoprene emission vary greatly and not all of them take oil palm cultivation in account. The present thesis aims to cover current knowledge on physiological functions of isoprene's synthesis and emission with regard to oil palm cultivation and ecological implications of mentioned processes. The thesis includes also brief insight into related topics to oil palm cultivation and prospects for future in both oil palm cultivation and isoprene emission.