

Breeding outdoor roses with a focus on essential oil compounds for citysumers and the processing industry

Roses have high cultural and economic importance as ornamental plants. First records on rose cultivation date back to 5000 years ago from China, western Asia, and northern Africa. In ancient civilizations of Crete, Greece, Mesopotamia, Persia, Egypt, and Rome roses had been planted mainly because of their fragrant petals and edible hips. Thanks to their scent, medicinal and culinary attributes rose usage expanded to industry. Especially significant roses have in the perfume industry. From the genetic point of view modern roses represent a complex mosaic: it is expected that up to 20 wild species gave a contribution to the final genetic fingerprint. During a long process of natural and later artificial selection driven by breeders genetic diversity of roses is narrow down. Unfortunately, most of the modern roses bred for exotic colors lost their scent.

Market research indicates that there is a market worldwide of € 50 - € 100 million turnover for producing essential oils for the processing industry. Until now the production is done with *R. damascena* 'trigintipetala'. This variety is characterized with excellent rose oil quality. On the other hand this variety is susceptible both to the diseases blackspot and rust as well as low temperatures. Furthermore, current knowledge highlights that essential oils are emitted from the petal base and *R. damascena* 'trigintipetala' has 17 – 25 petals. If the number of petals is multiplied with breeding several times and the amount of essential oil per leaf is kept the same, it will be a very promising market for a rose breeder. Aim of this project is to evaluate fragrance profiles of standard cultivars, detect genetic factors which lead to the fragrance expression, and develop a breeding strategy for fragrant roses.