Usage of intraspecific variability of lemon balm, *Melissa officinalis*, for the generation of new gene pools for plant breeding

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Lemon balm is a spice- and teadrug, which is used for over 2000 years, because of its lemon aroma. The main components are essential oil and rosmarinic acid. The pharmaceutical use as watery or alcoholic extract is due to its sedative, spasmolytic and antiviral effectiveness.

In the framework of the "Demonstrationsprojekt" "Verbesserung der internationalen Wettbewerbsposition des deutschen Arznei- und Gewürzpflanzenanbaus am Beispiel der züchterischen und anbautechnologischen Optimierung von Kamille, Baldrian und Zitronenmelisse" (KAMEL), lemon balm stands as a example for leafy drugs. This conglomerate of different projects tries to optimise the whole process of generating quality drugs and concerns plant breeding, plant growing, harvesting and drying. In 2010 and 2011 92 accessions of lemon balm from the collections of the federal state institute for agriculture of Bavaria and the *ex situ* gene bank of the Leibniz-Institute of Plant Genetics and Crop Plant research were tested in field trials. Special attention was given to agronomical qualities like winter hardiness, yield and essential oil content.

On the basis of these trials we could measure the potential of single accessions and evaluate the relation between morphological properties and qualitative characteristics. With the help of molecular markers (AFLP), we were able to generate the first phylogenetic tree of *Melissa officinalis*, which shows the degree of relation between the accessions and the collections. This information was of considerable importance for choosing partners for crossing.