

***In situ* Conservation and Use of the Wild Populations of *Coffea arabica* in the Montane Rainforests of Ethiopia**

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SUMMARY

Coffea arabica has its center of origin in the highlands of southwest and southeast Ethiopia. Wild Arabica coffee grows there in the understory of montane rainforests and is traditionally used by local people for their own consumption and as a cash crop. Internationally, the wild coffee represents above all an important gene pool for breeding, but also supplies a small specialty niche market in industrial countries. The montane rainforests with the wild coffee populations and their gene pool, however, are highly threatened by deforestation due to settlement and agricultural land-use pressure. From August 2002 to July 2006, diversity and economic value of the Ethiopian coffee gene pool as well as its forest habitat were studied in a transdisciplinary German-Ethiopian research project which considers natural sciences, economics and social sciences. The respective field studies were carried out in five forest regions of southwest and southeast Ethiopia. Vegetation analyses reveal that the montane rainforests differ in their plant species composition from region to region. Molecular-genetic analyses confirm the high genetic diversity of wild *Coffea Arabica*. Physiological studies show that drought tolerance of wild coffee is site-specific. Furthermore, wild coffee populations contain germplasm which is tolerant of coffee leaf rust and coffee berry disease. By means of a cost-benefit analysis, the potential economic value of the Ethiopian wild coffee gene pool as a resource for coffee breeding was assessed. Its present value amounts to US\$ 0.4-1.5 billion. Based on the project's results, concepts are to be developed for conservation and use of the genetic resources of wild *Coffea arabica* populations in Ethiopia. Wild *Coffea arabica* will only be conserved in the montane rainforests when the potential value of the coffee-genetic diversity can be transformed into real benefits for the people in the forest regions. For that, a financial incentive system is necessary. International fund-raising mechanisms for financing the incentives have to be developed. The coffee sector might play a prominent role in this context.