



Tropentag, October 11-13, 2006, Bonn

“Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research”

Interactions Between Coffee (*Coffea arabica* L.) and Intercropped Aromatic Plants under Field Conditions in the Sierra Norte of Puebla, Mexico

ALEX GUSTAVO PACHECO BUSTOS¹, HEINER GOLDBACH¹, JÜRGEN POHLAN²

¹University of Bonn, Institute of Crop Science and Resource Conservation, Germany

²El Colegio de la Frontera Sur (ECOSUR), Manejo Integrado de Plagas, Mexico

Abstract

In the context of studying allelopathic interactions between coffee (*Coffea arabica* L.) mint (*Mentha piperita* L.), Genovese basil (*Ocimum basilicum* L.), oregano (*Origanum vulgare* L.) and sage (*Salvia officinalis*), we tested the effect of the intercropped species on coffee growth and age of the coffee plantation on the intercropped herbs under two ecological conditions (900 and 500 masl) in Puebla, Mexico from February to December 2005. Caffeine released from decaying seeds and leaves accumulates in a soluble form in the soil. The compound is known to inhibit mitosis, limits the access of nutrients and water to surrounding plants which is one of principal problems in intercropped coffee plantations. The results demonstrate that sage, oregano, spearmint and basil are suitable for growing intercropped with different coffee cropping systems. In this study, we observed growth stimulation on coffee plants due to volatilisation of essential oils of intercropped species. These volatile essential oils can affect the leaf surface of coffee, diminishing the effect of oxidative stress caused by management and pruning. All tested herb species stimulated plagiotropic growth of coffee plants, increasing the length of the branches and the appearance of new leaves. There are indications that these herbs cope with high caffeine levels, stimulate coffee growth by a still unknown mechanism. Intercropping certain aromatic herbs with coffee may provide an extra income for coffee growers outside the harvest period. Intercropping basil, sage, spearmint and oregano in coffee plantations seems to be a promising approach for higher income and increasing yield production in coffee farms. Further research of the biochemical nature of these interactions is promising and needed.

Keywords: Allelopathy, caffeine toxicity, coffee (*Coffea arabica*), intercropping, *Mentha piperita*, *Ocimum basilicum*, *Origanum vulgare*, *Salvia officinalis*