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Different Farming Systems and Resilience Building in a Changing Climate – On-farm Comparisons of Organic and Conventional Cocoa Cultivation in Alto Beni, Bolivia

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Abstract

Resilience research has been applied to socioeconomic as well as for agroecological studies in the last 20 years. It provides a conceptual and methodological approach for a better understanding of interrelations between the performance of ecological and social systems. In the research area Alto Beni, Bolivia, the production of cocoa (*Theobroma cacao* L.), is one of the main sources of income. Farmers in the region have formed producers' associations to enhance organic cocoa cultivation and obtain fair prices since the 1980s. In cooperation with the long-term system comparisons by the Research Institute of Organic Agriculture (FiBL) in Alto Beni, aspects of the field trial are applied for the use in on-farm research: a comparison of soil fertility, biomass and crop diversity is combined with qualitative interviews and participatory observation methods. Fieldwork is carried out together with Bolivian students through the Swiss KFPE-programme Echanges Universitaires. For the system comparisons, four different land-use types were classified according to their ecological complexity during a preliminary study in 2009: successional agroforestry systems, simple agroforestry systems (both organically managed and certified), traditional systems and conventional monocultures. The study focuses on interrelations between different ways of cocoa cultivation, livelihoods and the related socio-cultural rationales behind them. In particular this second aspect is innovative as it allows to broaden the biophysical perspective to a more comprehensive evaluation with socio-ecological aspects thereby increasing the relevance of the agronomic field studies for development policy and practice. Moreover, such a socio-ecological baseline allows to assess the potential of organic agriculture regarding resilience-building face to socio-environmental stress factors. Among others, the results of the pre-study illustrate local farmers' perceptions of climate change and the consequences for the different crop-systems: all interviewees mentioned rising temperatures and/or an extended dry season as negative impacts more with regard to their own working conditions than to their crops. This was the case in particular for conventional monocultures and in plots where slash-and-burn cultivation was practised whereas for organic agroforestry systems the advantage of working in the shade was stressed indicating that their relevance rises in the context of climate change.

Keywords: Agroforestry, Bolivia, cacao cultivation, organic agriculture, resilience, system comparisons