

A research concept for the development of alternatives to slash-and-burn agriculture in the Eastern Amazon region

Denich, Manfred ⁽¹⁾, Vlek, Paul L.G. ⁽¹⁾, Abreu Sá, Tatiana D. ⁽²⁾, Vielhauer, Konrad ⁽¹⁾
and Lücke, Wolfgang ⁽³⁾

⁽¹⁾ Zentrum für Entwicklungsforschung (ZEF), Universität Bonn, Deutschland, ⁽²⁾ EMBRAPA Amazônia Oriental, Belém, Brasil, ⁽³⁾ Universität Göttingen, Deutschland

Research-based changes in traditional land-use systems are difficult to bring about, as examples from agroforestry research have shown in different parts of the world. Even under changing environmental conditions, such as slow land degradation, it can take years to decades until a new agricultural practice which mitigates the environmental constraints has been adopted by the farmers. Compared to on-station research, participatory on-farm research might have the advantage that the adoption of new technologies by the farmers is more likely. On the other hand, this approach very often hardly meets scientific standards. In the project "Secondary forests and fallow vegetation in the agricultural landscape of the Eastern Amazon region – function and management" we opted at the very beginning for researcher-managed on-farm research. This approach has the advantage that precise field experiments can be carried out under ecologically realistic conditions and, simultaneously, of acquainting the farmer with the problems associated with the development of a farming technology and its pros and cons. The basic idea of the project was the improvement of the traditional fallow system with slash burning for land preparation and differs in this respect from attempts to develop completely new land-use systems. Only those components from a traditional land-use system, recognized to be harmful to the system, are replaced (e.g. slash burning). Additionally, other components of the system might be modified (e.g. improved crop varieties) leading to a further improvement of the system, so that a set of modules can be offered to the farmer. Thus, the ability of the farmer to adopt new technologies increases, as the system can be modernized step by step and the risk to farmer can be controlled by himself. To achieve this objective the project's research followed a phased plan: it started with diagnostic research (e.g. nutrient balance of the traditional land-use system, studies on the vitality of the fallow vegetation) followed by solution-oriented research consisting of technology development (enrichment planting, bush chopper) and prototype evaluation (fallow management, fire-free land clearing). Presently, we are in the phase of impact-oriented research which is multidisciplinary and participatory in nature and aims at developing implementation strategies to support development agencies, extension services or the local authorities. This phase includes agronomic on-farm research with deliberate participation of the farmers for its economic evaluation. A local mechanical engineering company is involved in the construction of the newly developed farm machinery and a local contractor puts the device at the farmers' disposal. To facilitate the adoption of fire-free land preparation as an ecologically sound agricultural practice, the possibility to offer national and international monetary incentives by global environmental markets (emission trade, clean development mechanism) and ecolabeling will be discussed. Examples will be given to illustrate the three phases of research and the relationship between different modules. The adaptability of the concept to the highly dynamic agricultural sector of the study region and its contribution to sustainable resource use and sustainable development will be stressed.