



Deutscher Tropentag, October 5-7, 2004, Berlin

“Rural Poverty Reduction through
Research for Development”

Agroforestry Use of *Inga edulis* in the Peruvian Amazon

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Abstract

Amazon rain forest has witnessed high rate of deforestation during the last 3 decades. The major cause of this deforestation is traditional small-scale shifting cultivation with the farmers using mainly slash-and-burn methods. Approximately 0.5% (350 000 ha) of the Peruvian Amazon is converted to cropland or pastures each year, with greatest rates of deforestation occurring around population centres, such as Pucallpa, the capital of Ucayali region. Farm productivity in the Peruvian Amazon basin may be increased through the promotion of agroforestry in conjunction with the domestication of native tree species. This improved farm productivity through agroforestry is expected to reduce deforestation rates by decreasing demand on primary forests.

The objective of the first research was to evaluate ecological sustainability of traditional land use systems in Peruvian Amazon basin around the city of Pucallpa in comparison with improved agroforestry systems, then to design improved agroforestry system and to establish demonstration plots on the farmer's field using Participatory Technology Development methodology. The computer simulation of this land use systems was done, using computer model SCUAF (Soil Changes Under AgroForestry). A farming system of planted leguminous tree fallow was modelled. The system involves establishing an *Inga edulis* plantation in the fallow period, which is an adaptation of the improved fallow agroforestry systems. The *Inga* fallow system was compared with a traditional shifting cultivation fallow system and the results indicate that the system with *I. edulis* is more sustainable than traditional shifting cultivation system.

Following these results 13 demonstration plots (50 × 50 m) were established on farmers field in two communities around the city of Pucallpa. For the control of noxious weeds (e.g. *Imperata brasiliensis*) the establishment of *I. edulis* plantation was combined with 3 cover crop legumes (*Mucuna pruriens*, *Pueraria phaseloides*, *Centrosema macrocarpum*). The plots are managed by farmers and the growth of *I. edulis*, growth of weeds and soil changes will regularly be monitored. The economical and ecological sustainability will be evaluated during the time.

Keywords: Agroforestry, *Inga edulis*, Peruvian Amazon, SCUAF, shifting cultivation