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Ivonne Acosta-Alba, Muriel Tichit, François Leger

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# Modelling sustainability of agro-pastoral systems in Bolivian arid highlands

I. Acosta-Alba, M. Tichit, F. Léger - UMR 1048 SADAPT- INRA-AgroParisTech  
 16 rue Claude Bernard – 75231 Paris cedex 05, France – Contact : francois.leger@agroparistech.fr

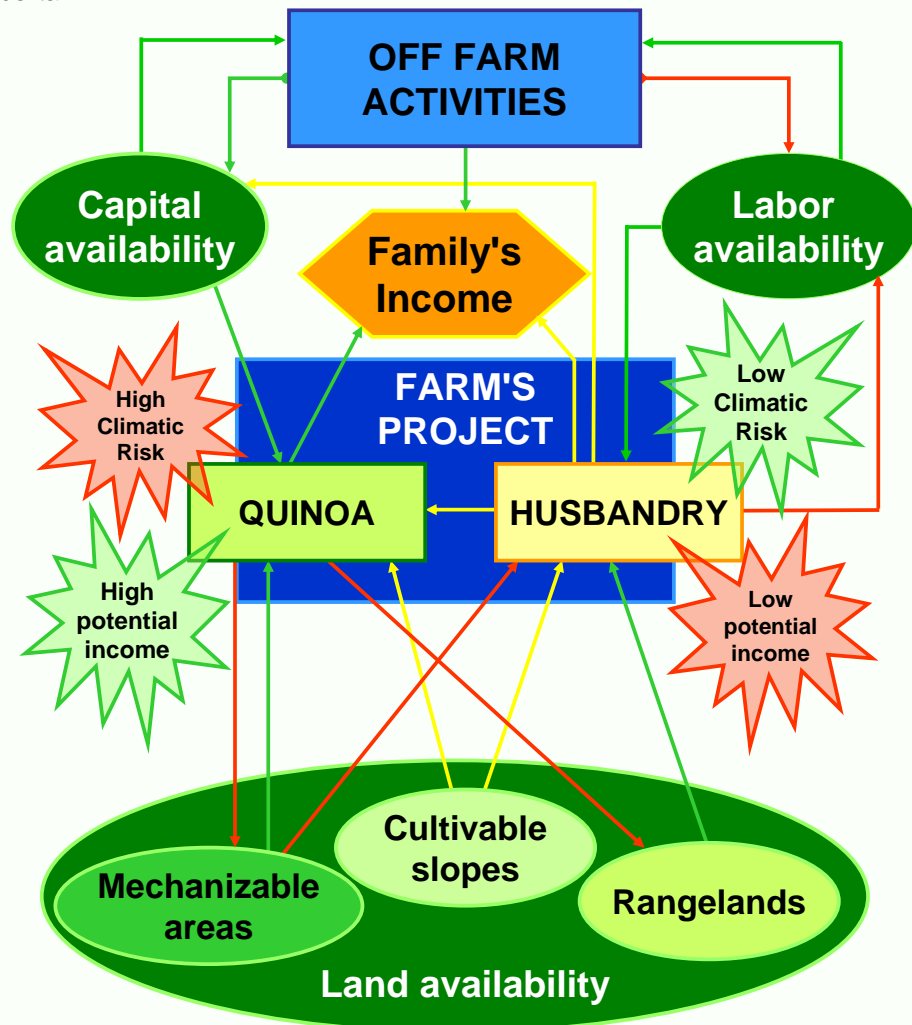
Increasing weight of off-farm activities, mechanization, internationalization of quinoa's market. Since 25 years the farming systems of the Bolivian Altiplano went through huge changes, which produced a marked improvement of peasant's living standards. However, the transformation of agricultural practices and management of natural resources, the specialization in quinoa's production and the strong decline of llama and sheep husbandry, threaten the functional integrity of the agro-ecosystem. As a result of the imbalance between ecological, social and economic features, the sustainability of the quinoa-based model of development appears uncertain.

This conceptual model describes the main relationships within the farming systems, in order to run simulations which could feed the debates between stakeholders about sustainability of the possible scenarios for the development of Bolivian Altiplano.

→ Green arrows represent positive relationships (e.g. : a high availability of mechanizable land leads to cultivate large areas of quinoa for a higher level of income).

→ Yellow arrows represent weakly positive relationships (e.g. : because of low prices, husbandry has generally a low contribution to family income)

→ Red arrows represent negative relationships (e.g. : the mechanizable areas are cultivated, thus they are not available as rangelands. At the same time, the practices of cultivation entail a fast decrease in the fertility of soils, forcing the peasants to clear new fields).



This model is based on a field study in the southern Altiplano (elevation range 3600-4100 m), the most important quinoa-producing area of Bolivia. The data come from surveys and interviews carried out with producers and experts in six representative communities from May to August 2007.