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“Bridging the gap between increasing knowledge and decreasing resources”

How Perceptions and Knowledge Can Lead the Process of Climate Adaptation Using Local Resources: Two Study Cases of Southern Brazil

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Abstract

In Southern Brazil, rural communities present a particular process of resources management to climate adaptation and to ensure food security. The objectives of this work are i) to determine the stakeholders perception of climate change and their social organisation, ii) to assess the impacts of climate scenarios and adaptation strategies on maize yield and iii) to identify the key elements responsible for driving the development and implementation of adaptation strategies considering local resources. The analysis of socio-economic aspects from the study sites Anchieta and Guaraciaba was based on strong participative stakeholder involvement, so as using data from official sources. Perception studies carried out involved the use of semi-structured interviews (n=25) and mapping of the social organisation of the rural population. Besides that, on-farm field experiments were done to run a crop model and assess the impact of climate change scenarios on maize yield (region main crop), so as to test adaptation strategies such as crop cultivar and planting date. The results i) indicate that all interviewed farmers perceived climate variation (and also the perceived change in climatic patterns) affecting significantly agricultural production during last twenty years, impacting directly on family income. The observation of changes and variation of climatic patterns (droughts, floods, frost) led to the development of local knowledge about how is possible to improve their live conditions despite climate adversities (using different strategies to reduce the susceptibility of agricultural systems). Also, regarding objective ii), depending on the climate scenario yields can be drastically reduced under the present management. When adaptation strategies such as locally adapted cultivars (landraces) and adjustment of planting date are used, losses can be reduced and even compensated. The main aspect to emphasise in terms of adaptation process iii) is the higher resilience of the crop landraces – developed and maintained as part of community’s commitment to improve local resources efficiency. Finally, it was identified that the community’s social organisation and social support network are the key elements responsible for the development and employment of local adaptation strategies. This autonomous and autochthonous decision making process ensured conditions that fostered the resilience of local agricultural systems.

Keywords: Climate change and variation, community based, local resources, participatory, resilience of agricultural systems