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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Effects of environmental and political framework on alpine farming and its development in the Entlebuch UNESCO Biosphere Reserve Switzerland

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Key words : mountain region, alpine pasture, land-use types, cattle farming, Swiss Agriculture Policy

Introduction Large areas of the Entlebuch UNESCO Biosphere Reserve (UBE) are dominated by a patchwork of different habitats. The most important one is grassland under different site conditions. It is interspersed with raised bogs, peat bogs, forests, abandoned land, unproductive land and all intermediate habitats. Most grassland is used as alpine pastures or designed as nature or landscape conservation area. The new Swiss Agriculture Policy 2011 (Agrarpolitik 2011, 2007) supports grazing activities in alpine regions with contributions under adverse production conditions, hillside contributions and by allocating payments for cattle summering. The questions are: What is the share of each land-use type in an average alpine farm? How do these subsidies influence the land-use types and alpine farming in general?

Materials and methods The study area is situated in the northern foothills of the Swiss Alps and exposed to a sub-oceanic climate. The analysis of the land-use types was taken from the cadastral register of alpine farms of Lucerne (Hofstetter et al., 2006) and data about stocking rate come from Lawa (2007). Data about the impact of agro-environmental policies are basing on studies of Hofstetter et al. (2007) and Caballero et al. (2007).

Results and discussion In 2005, 75% of the 1,015 mountain farms in the UBE are full-time holdings with an area of 16.9 ha and 25.9 livestock units (LU). 43.3% of the working population is employed in the first sector (AfS 2007). Six percent of these farms are organic farming in comparison to the Swiss average of 10%. Some 20% of the farm units also share one alpine unit, moving animals to the latter for summer grazing. In the UBE there are 211 alpine farms with an average area of 51.1 ha. Fifty-nine percent of the area is pasture. The average stocking of roughage consuming livestock was 27 LU. One hundred fifty-seven alpine farms also consist of forest with an average forest area of 17.8 ha; 43 alpine farms consist of 5.2 ha mowing pasture, 32 alpine farms have forest pasture with an average size of 5.7 ha and there are only 31 alpine farms with unproductive land (Ø 28.7 ha). From 2003-2007 the average stocking rate of roughage consuming livestock was 84% of the maximum legal stocking rate. Medium-term, this results in a growth of forest on bad alpine pastures. The Alpine season lasts 111 days, usually starting by the end of May and ending in September. Indoor-feeding with hay or silage on lowland farm is dominate during the winter. Most hay and silage come from the meadows of the owned farm allocated in the valley or the lowland area. At a higher elevation from 1,600 to 2,000 meters a.s.l., the grazing period is shorter, up to 90 days per season. Although the grazing season is very short, alpine pasturing shows important advantages. Due to the summering, lowland farms are able to keep more livestock units. But it seems to be more difficult to get cattle for summering on alpine pastures because of the intensive breeding in the lowland. In 2003/04 direct payments amounted to approximately 45% of the total income of the farms. The new Agriculture policy is implementing more direct payments on mountain farming. This will lead to an intensification of good alpine pastures, which are also better developed and to an increase of the forests as described in the study by Baur et al. (2007).

Conclusions Alpine pastures are a major characteristic of the cultural landscape of UBE. Cattle summering will become more difficult. But the high subsidies will lead to an intensification of the good summering pasture. It is important to focus not only on single alpine pastures but also on the regional context identifying the optimal utilisation (heifer, fattening, sheep, suckler cows) and on various ecological conditions. Such regional distribution gives the chance to optimise economic benefits considering ecological conditions and to implement sustainable development.

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