DRIVERS OF CHANGE IN MOUNTAIN AGRICULTURE: A THIRTY-YEAR ANALYSIS OF TRAJECTORIES OF EVOLUTION OF CATTLE FARMING SYSTEMS IN THE SPANISH PYRENEES

Muñoz-Ulecia, E., Bernués, A., Casasús, I., Lobón, S., Olaizola, A., Martín-Collado, D.
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Mountain regions are characterized by complex interrelations between human and natural systems. Political and socioeconomic drivers at various scales affect **mountain farming systems** functioning, resulting in farm structural changes (management, structure and economic performance). Longitudinal studies help fully understand the dynamics of these systems, identify their main drivers of change, and prepare for foreseeable future events.

This study aimed to (i) analyse the **main changes of cattle farming systems in the Pyrenees** from 1990 to 2018, (ii) identify the different trajectories of farm evolution and (iii) to determine the key drivers of those trajectories at global, regional and household levels. We monitored **50 cattle farms** in three valleys with different socioeconomic contexts, which were surveyed in 1990, 2004 and 2018. We observed clear changes regarding land and labour production factors.

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Over the 1990–2004 period, farming systems experienced a **land use extensification** (one-month increase of grazing season) and **capital intensification** (55% increase of livestock units (LU) per work unit (WU)) processes, coinciding with a switch from dairy to beef farming with on-farm fattening.

Over the 2004–2018 period, **land use stabilised** but the capital intensification process went on (17% increase of LU/WU) while **farms reduced their inputs** (43% decrease of feeding costs per LU), in parallel to the decreasing importance of fattening.

These changes allowed to globally maintain stable farm economic margins (around 40,000 €/WU). Multivariate statistical analyses enabled to identify four trajectories of evolution, three of them specific to each valley under study and a common across-valleys trajectory. These trajectories resulted from the **interaction between global and regional drivers and household particularities**.

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The CAP played a major role at the global level (representing an average of 70% of farm gross margin in 2004 and 2018), while tourism development and household characteristics were the main drivers at the regional level. Several farms responded by maximising their output related to the most limiting production factor (i.e. agriculture land or labour) in each valley.

However, the across-valleys trajectory, which comprised 44% of farms, showed limited changes during the studied period. **The ability of farms to maintain their adaptation capacity while keeping economic and social viability will determine the future of cattle farming in the region**.

Our findings highlight the need of reorienting agricultural policies towards promoting new entrants into mountain farming, better integrating **CAP instruments** with other **EU sectorial policies** and improving farm monitoring by disaggregating follow-up processes by agroecosystem and management regimes.

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