Quantifying multifunctionality of pasture-based livestock systems in Mediterranean mountains

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Mountain agroecosystems, mostly pasture-based livestock systems (PBLS), are highly multifunctional. Many of these functions constitute public (non-market) goods, and farmers have little incentive to provide them. The application of the Ecosystem Services (ES) framework to PBLS enables the simultaneous assessment of all goods and services, both provisioning (food products) and non-provisioning (regulating, supporting and cultural), at the same priority level, allowing for a further integration of agricultural and environmental policies. However, the incorporation of non-provisioning ES to policy design is challenging, being their quantification one of the main problems. Based on a previous socio-cultural valuation of ES delivered by PBLS in Spanish Mediterranean mountains, we used a survey-based stated-preference method (choice modelling) to obtain a ranking of ES and their economic value according to the willingness to pay (WTP) of the local (residents of the study area) and general (region where the study area is located) populations. For the general population, the prevention of forest fires (53% of total WTP) was valued as a key ES, followed by the production of specific quality products linked to the territory (20%), the conservation of biodiversity (18%) and cultural landscapes (8%). For the local population, the prevention of forest fires was also valued in the first place (40%), followed by the production of quality products (26%). However, the value attached to biodiversity and cultural landscapes reversed (9% and 25%, respectively). The link between ES and different components of the Total Economic Value taxonomy allowed giving an economic value to mountain agroecosystems, which was 120 €/person/year for the general population (three times the current level of support of CAP agro-environmental policies) and 197 € for the local population.