

## **Grazing with robust cattle breeds: an opportunity to sustainably use mountain grassland**

Caren M. Pauler<sup>1</sup>, Manuel K. Schneider<sup>1</sup>

<sup>1</sup> Agroscope, 8046 Zurich, Switzerland

Livestock breeding strongly enhanced the productivity of cattle. If these modifications unintentionally altered the foraging and movement behaviour, too, there would be far-reaching consequences for vegetation, especially on biodiverse mountain pastures.

To analyse the impact of productivity on grazing, we compared suckler cows of low-productive Highland cattle (HC) with medium-productive Original Braunvieh and high-productive Angus×Holstein in a controlled experiment in the Eastern Swiss Alps. We weighed the cows, measured their claws, tracked their movement by GPS and pedometers and recorded the botanical composition of the diet while grazing species-rich alpine pastures. A second study compared the vegetation of 25 pastures grazed by HC for at least 5 years with 25 similar, neighbouring pastures of high-productive cattle.

HC differed from more productive breeds in almost all parameters: (1) They were significantly lighter, but had relatively large claws. Thus, the pressure is spread over a large area, which protects the sward. (2) HC covered less distance, which further reduces trampling impact. Consequently, trampling-adapted plant species were far more common on the pastures of productive breeds. These plants outcompete more-susceptible species, thereby decreasing biodiversity. (3) The more productive a breed is, the more selectively it grazed. High-productive cattle preferred nutrient-rich, easily digestible forage plants, whilst low-productive cattle more often fed on unattractive plants. Thereby, they reduce the dominance of problem plants, which in turn promotes pasture biodiversity and forage quality. Even woody plant species were consumed frequently by HC, which makes them an attractive option for shrub control in mountain areas. (4) HC used the pasture more evenly by visiting steep slopes and areas of low forage quality. Consequently, there were fewer over- and underused areas. (5) The productive breeds lost weight on the marginal, alpine pastures whereas HC gained weight, indicating a more efficient roughage conversion.

Low-productive cattle can make efficient use of mountain grassland, thereby sustaining these pastures and promoting biodiversity. On many mountain farms, the existing livestock could be supplemented by an extensively reared 'service herd' with minimal effort and expense.