Robust livestock in green alder shrubs – or how to preserve mountain pastures

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Problem

Green alder shrubs overgrow mountain pastures:

→ loss of biodiversity

→ loss of pastureland

→ eutrophication due to alder's N_2-fixation

→ dead end of succession

Question:
Which animal represses green alder shrubs best?

Grazing experiment

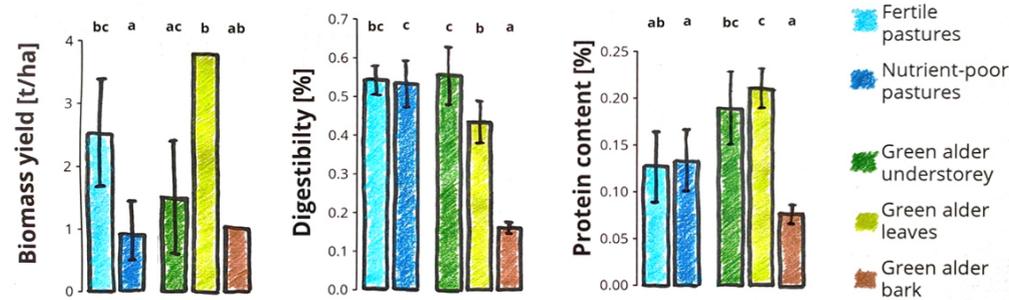**Where?** Shrub-encroached pastures in the Swiss Alps, 2000 m a.s.l.

Who?

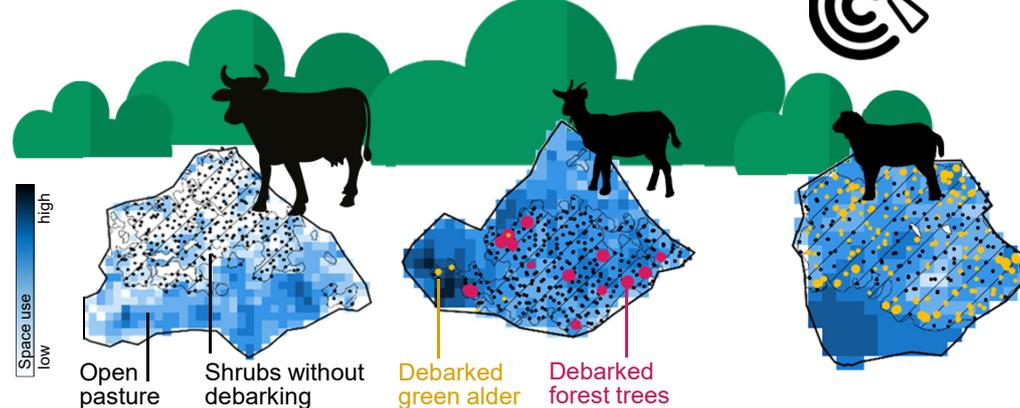2 Dexter cattle herds   1 Pfauen goat herd   2 Engadine sheep herds

How? 2 independent rotations among 15 paddocks

What? Vegetation analysis + GPS tracking + foraging observations

Forage quality of green alder shrubs and pastures

Legend:
- Fertile pastures
- Nutrient-poor pastures
- Green alder understorey
- Green alder leaves
- Green alder bark

Space use and foraging behaviour

Debarking = branches die = effective regulation

Space use: low — high

Open pasture   Shrubs without debarking   Debarked green alder   Debarked forest trees

Suitability for different management goals

Management goal	Dexter cattle	Pfauen goats	Engadine sheep
Pastureland use by grazing in shrubs	✓	✓✓	✓✓
Recreating open pasture by debarking green alder	✗	✓	✓✓
Creation of mountain forest by sparing forest trees	✗	✗	✓✓

Conclusions

Forage yield and quality of green alder and its understory is an underestimated forage resource.

Cattle prefer open pasture and feed shrub leaves only.

Goats destroy shrubs by debarking, but prefer forest trees.

Engadine sheep debark green alder more than goats, without destroying forest trees.

Choice of livestock depends on management goals. Engadine sheep are ideal for recreating both, mountain forest and biodiverse open pastures.

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