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Alpweek:

let them graze! - challenges and opportunities ruminant production in mountain pasture systems

Brig - Alpweek Sept. 06. 2022 Franz Josef Steiner FiBL

Definition alpine pastures, (Alp) short history

a) <u>Now</u>

- Alpine pasture and alpine agricultural land are based on a different direct payment system
- the most important difference are:
- alpine pastures payments are based on the number of livestock calculated in units, "Grossvieheinheiten" meaning one milking cow in one unit. The heifers are according to the age less 24 months old for example ist 0,6 unit.
- For some years now, not only the Alp Farmer gets direct payments but also the owner of the animals
- Plants listed as "problemplants" must be eliminated combated.



Definition alpine pastures, (Alp) short history

b) <u>Old</u>

- most of the Alps belong to cooperative consisting of local citizens
- the rights to graze cattle on there are passed down from generation to generation
- The 20 000 Schwyzer Oberallmeindkorporation (OAK) citizen for example own over 150 alps
- first documentary mention of the cooperative goes back to the year 1140
- on excavations in the muota valley, evidence was found that hunters and gatherers visited the heights of the Glattalp as early as 10,000 years ago.
- at that time the forest boundary was higher than now, during a short warmperiod.
- all signs indicate that at that time that the alpine pastures were deforested from above with goats and sheep, burning of dry gras and shrubs, axes for buildings and firewood.
- Burning was practiced until the 1960s



types of alpine pastures

- <u>a)</u> classification according to height levels:
- Alpine foothills 800 1600 m above sea level (Voralpen)
- Alps below the forest line, between 1700 1900 m above sea level
- Alps with different height levels,
- There are very few alps having only pastures above the forest line
- **b)** classification according to the soil gras quality
- <u>c)</u> classification according to animal type, meaning:
- Milking cows
- Suckling-mother cows)
- Young cattle, heifers, oxen (no bulls)
- Sheep, Goat, for milking pasture cleaning bushes shrubs

Forest grazing in alpine regions: a re-evaluation of a multi-usage tradition

Mountain forests of the Alps usually fulfill several functions on the same area, such as timber production, protection against natural hazards, recreation and biodiversity.

On 15% of the mountain forest area, another use is added: forest grazing. The dual use of forest areas for agriculture and forestry has a long tradition in the Alps (STUBER & BÜRGI 2001).

The importance of forest grazing varies considerably from region to region. In the central alpine belt (Grisons and Northwest Alps), a quarter of the forest area is grazed (BRASSEL & BRÄNDLI 1999).

In many regions, forest pastures are now almost exclusively used with cattle



Schweizerische Zeitschrift

(2004)

The results of the research project show that subalpine wood pastures produce a heterogenous forest structure, which provide appropriate forage for cattle as well as sustainable protection from natural hazards.

A condition is that the animal stocking rate does not exceed a certain level in order to keep browsing damage to a minimum, thereby influencing as little as possible the regeneration of the forest.

A close combination of forest and pasture provides better protection from avalanches than the separation of forest area from enlarged open pastures.



Animal Type



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Info: Department of Environmental Sciences of the University of Basel, CH-4056 Basel, Alpine Research.

It is not only the forest and the green alder which are spreading at the expense of centuries-old cultivated landscapes, but also other plant species such as the bracken, alpine rose etc..

Unlike these species, the green alder lives a symbiosis with a bacterium.

The bacteria form root nodules in the soil together with the green alder and convert nitrogen from the air in such a way that the alder can use it as a nutrient.



Intensivity of alps Analysis of the WWF



Intensively farmed areas are most common in broad valleys and on easily accessible slopes. The negative impacts associated with this kind of farming are mainly due to the massive use of fertilizers, grading, and drainage. It is also the source of homogenisation and monoculture crops.

- Conversely, the traditional labour-intensive farming areas, where different agricultural products are produced over small surfaces, are being wiped off the map as the older farming generations disappear and alpine pastures are abandoned.

- This often entails a loss of biodiversity, as species-rich meadows are replaced by a thick bush cover and eventually, completely erased by the return of the forest.

- In the upper reaches, a small number of big farms with very large numbers of cattle convert mountain meadows and pastures into heavily fertilized 'green deserts'.



Analysis of the WWF



• In the last 50 years, traditional Alpine farming changed radically: remote farming locations were abandoned while the more favourable zones were intensified. This trend has led to a decrease in biodiversity as species rich mountain pastures are either converted into heavily fertilised 'green deserts' or overgrown by forests



- Green alder (Alnus viridis) is a pioneer shrub species that has expanded over former pastures in Central Europe due to land abandonment, leading to negative agri-environmental impacts, such as an increase in nitrate leaching and soil acidification.
- Robust livestock breeds, such as Highland cattle, could be used to control A. viridis expansion and create an agro-silvopastoral system aiming at restoring alpine grassland services. The objectives of this study were to investigate the impact of A. viridis encroachment on plant community composition and diversity and to map the spatial distribution of Highland cattle in A. viridisencroached pastures with the strategic placement of attractive points.



ANDREA CORINNA MAYER, VERONIKA STÖCKLI, NIKOLAUS GOTSCH, WERNER KONOLD und MICHAEL KREUZER Keywords: Agroforestry, browsing, mountain forest, silvopastoral systems, wood pasture.

Summary Forest grazing in alpine regions: a re-evaluation of a multi-usage tradition The results of the research project show that subalpine wood pastures produce a heterogenous forest structure, which provide appropriate forage for cattle as well as sustainable protection from natural hazards.

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Swampy marshy pasture in the conservation area of central Switzerland "Ibergeregg"



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Orignal brown swiss adapted to the various conditions local breed





Alpine Agroforest aprox 1600 m above sea





Jersey cows: only on "easy" pastures







Charolais mother cow 2000 m above sea level during the dry 2022 summer eating yellow gentian





Charolaise mother cows with calfes





On the forest boundary approx. 1800 m above sea in the muota valley





Alpine Agro Pasture Forest 1200 m above sea





Rumex Alpinus "overfertilized" pastures in earlier days used as pig feed and vegetable for human consumption





Young cooked leaves are delicious and contain no oxal acids

Young Rumex freshly picked



= Delicious to eat





Rumex Seed I 5 % mixed in baking flour





All sorts of brushes shrups trees are growing = valuable biodiversity, breeding place for "ground breeder" birds, small mammals like hares, wiesel, as well as deer etc.





Shallow limy bog land tree roots find no foothold





Unwanted plants Thistles thistles are Insect and bird pastures

Swamp thistle



Alpine thistle



Nature friendly organization are helping to get rid of unwanted plants





on undisturbed alpine soil = organic matter is building up continuously = C02 sink





Alps with Milking cows are often managed like a home farms = additional fodder for the cows and pigs = "over" fertilized pastures





Very poor loamy soil "Flyschboden"





Modern alpine water supply for the grazing cattle, the soil damages can so be minimized, its more comfortable for the animals and the herdsman





On swampy soils it is a challenge to produce a acceptable waterplace





A good solution: watersupply with an automatic dispenser





Cow dung repellent – "wormicide" can kill insects - dung does not decompose, to high dose it can harms the cattle





Misunderstanding of the new regulations Alp, are being cleaned! With the help of herbicides





Poisonous plants are being eaten by animals when sprayed with herbicides, = "salty taste"

White hellebore, yellow gentian



Blue Aconite, Aconitum Napellus



White hellebore

Yellow Gentian

Veratrum album



Gentiana Lutea





Green alder being cut





Ferns to get rid of them: they must be cut three times per year during three years

Common bracken, Pteridium aquilinum



Malefern Dryopteris-filix-mas





Wildlife "Gemse"





Goats are cleaning pastures





Goats like al sorts of plants inclusive green alder, but have to be fenced





fresh cut christmas trees





Gran Alpin program arable land

Mountain agriculture not only contributes a lot to the biodiversity of the mountain area by preventing a one-sided focus on grassland farming in the mountain area, but it also shapes the cultural landscape.

It is a flagship for an environmentally friendly canton, and serves nature and the market at the same time. Between 1999 and 2006, mountain farming in zones 2 to 4 in Graubünden declined by 69%. This is primarily due to financial reasons:

Mountain farming is costly, the yields are excellent in terms of quality, but modest in terms of yield.

http://www.berggetreide.ch/Geschichte_Kulturpflanzen.html#Weizen



Young rumex = pig feed





Cut green alder





Green alder bushes and shrubs taking over pasture land





Moveable Container for milking equipment





Traditional haystak later used as bedding in the barn



Protected integrated shallow bog also water for cattle available





Poisonous plants on protected spot between rocks





clear boundaries are created trees - shrubs are beeing cleared





Lower alp pastures are more difficult to manage





Loamy – wet - bog soil Exemplary good managed all shrubs – bushes and trees are being cut!





- Well-managed alpine pastures!!!!!
- have clear demarcations from the forest!!!
- no shrubs, bushes or trees inside the pasture area!!!





the cleared trees are clearly visible on the upper right-hand side



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Not so well managed!!!





Conservation area integrated in alp





the Alpine Ragworth probably the most hazardous Plant in the Alps Senecio Ovatus flowers later and grows mainly on "protected" spots

Alpine Ragwort, Senecio Alpinus (in Horsemint, Mentha Longifolia)



Wood Ragwort, Senecio Ovatus



Senecio Ragworts are probably the most widespread "unwanted" herb

Senecio Alpinus



Senecio Jacobea



The latest "Ragwort-Senecio ovatus in between juniper





Teamwork at the Alp Watermountain in the muota valley FiBL Alpvisit summer 2022

Herdsman, Gerold Gwerder



Cheesemaker, Käthi Gwerder





Cutting Christmas tree





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