



## SILVOPASTORALISM / GRAZED FORESTS

### SUSTAINABLE AGRICULTURE THAT BALANCES TREES/FORESTRY AND PASTORAL OBJECTIVES

#### BEST PRACTICE OBJECTIVE



This farming practice for meat and milk production consists of grazing the forest by livestock to exploit the spontaneous fodder resources located under the trees or agricultural grassland with trees to provide better microclimate and enhance welfare of animals where trees provide fodder resource too. At the same time, silvicultural thinning can contribute to the development of trees and allow the production of wood and other products (i.e. fruits, nuts, medicinal use). In this way the potential of land is being used maximally, because in the first stages of forest stands the excess vegetation is not used and the grazing can also facilitate debranching of future tree stems. On the other hand, grasslands with no trees and no animal presence are exposed to various degradations covering soil, overall biodiversity or bush encroachment.

#### THE ESSENCE OF THE PRACTICE



The coexistence of silvicultural valorization and pastoral use in the same area covers different situations. The wooded areas are quite varied: by the environments (soil, climate, vegetation, habitats), by the diversity of the owners, their motivations and their methods of valorization. Schematically, one can distinguish three well differentiated situations.

#### The grazed forest

Forest stands are considered where conventional management is conducted without taking into account the influence of silviculture on the fodder resource. A forage resource (herbaceous or shrub) may appear at certain periods of the silvicultural cycle, following a thinning, for example. An opportunistic grazing can be undertaken by animals until the resource disappears as a result of the canopy closure.



Pasture in a pubescent oak stand / Overgrazing of cattle in a small park



### The wooded course

This concerns areas of agricultural abandonment (pre-forest, wastelands, abandoned grasslands, colonization fronts) where grazing is practiced until the total colonization of ligneous plants and the closure of the canopy. Without silvicultural intervention, grazing is condemned in the medium term.

### The silvopastoralism

The forest ecosystem or grassland with trees guarantees soil stability everywhere. The grazing of animals can help with silvicultural interventions (undergrowth cleaning, better circulation, structuring of space). Conversely, without intervention on trees, pastoral use is condemned in the long term by the inevitable closure of tree cover. This modality is the true form of silvopastoralism combining, with reciprocal benefits, the two modes of rational valorization together, on the same space.

## TOOLS AND MACHINERY



To facilitate the outcomes of silvopasture, the focus mainly is for the trees, so they are not harmed by livestock. This can be achieved using different kinds of fencing. For this a fence (around 1 euro / m<sup>2</sup>) and poles (10 Euros each) are needed. Possibly also a drill for soil to place the poles more easily (Manual 300 – 1600 Euros). The poles can be beaten in ground also with manual labour with special device (seen in picture), which costs around 100 Euros.



Protection of seedlings against cattle grazing / Fence for livestock / Manual pole beater

## PERIOD OF TIME AND PERIODICITY



For most of silvopastoral practices the period, which could be feasible would be the whole period of vegetation. Depending on the cattle size and grazing intensity, of course. If the grazing intensity is high, the period and/or area could shift, depending on the regional climate conditions. Basically all grazed undercover regrow relatively fast, so it is possible to reuse the same area repeatedly thorough a year or from year to year depending on type of silvopastoral system (forest or grassland with trees) or stage of tree development/tree cover closure. In fact, if the main focus is to create better environment for trees it would be even recommended.



### ECONOMIC DATA



Predominant vegetation management methods include use of herbicides and manual or mechanical brushing in forests. Methods used less frequently include prescribed fire and biological control. The principal factor that limits the use of manual methods is the associated high cost. According to Boateng (2007), manual vegetation control costs an average of 540 \$ / ha in BC, compared to 375 \$ / ha for chemical treatments. Because of environmental concerns, forest practitioners are increasingly interested in using biological methods (e.g., livestock grazing). According to Boateng (2007), sheep grazing may be a suitable alternative to chemical or manual vegetation control and has been reported to cost an average of 350 \$ / ha in BC. Monetary benefits can encourage the use of sheep grazing in young conifer plantations. Moreover, sheep grazing offers environmental goods and services by avoiding air and land contamination, which is not the case with other practices (chemical or mechanical methods). In grassland with trees initial investment in tree plantation and its mechanical protection is returned thorough years by increased production of fodder, decreased stress of animals by improvement of microclimate and welfare and by production of timber or fruits.

### PRACTICAL EXAMPLE



Most of active silvopastoral practices exist in developing countries in Africa and South America. But there are also examples in other parts of world. The Sheep Vegetation Management (SVM) is a relatively recent biological method to control competing vegetation in conifer plantations in British Columbia (BC). This approach consists of grazing livestock in a forest plantation, especially coniferous, with the intention to eliminate vegetation that competes with commercial species. Foresters are often reluctant to introduce livestock into the stands, because of possible damage to the trees as well as the lack of data to evaluate the effectiveness of this practice, although results (Serra, Ruth 2013) suggest that grazing improves intermodal length growth of hybrid spruce. To make SVM a profitable method in conifer plantations, it would be necessary to shorten the rotational period. In Europe exist active practices of grazed forested/shrub areas in Mediterranean region where especially prevention of fire is highlighted. In west and central Europe grazed high stem extensive orchards represents remnants of silvopastoral practice from the past.



Sheep browsing can be an effective method for controlling vegetation in some plantations. Cattle in extensive orchards can benefit from shade and can use trees to rub themselves.



Master thesis regarding sheep vegetation management |  
<https://corpus.ulaval.ca/jspui/bitstream/20.500.11794/24919/1/29905.pdf>



Experimenting small scale sylvo-pastoral system with deers - Radim Kotrba |  
<https://youtu.be/yDprnp4rED8>



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