

Agroscope

Ruminants & Pigs Research Division

Grazing Systems

Project status 2014

1. Varietal Recommendations and Development of Standard Mixtures

The development of standard mixtures is based on the updating of the recommended varieties as well as on the changing demands of farmers. Our trials currently focus on the development of mixtures containing sainfoin and birdsfoot trefoil. These two legumes associated with different grasses in different variants, are studied on our experimental sites. The criteria evaluated are the botanical composition, persistence, yield and nutritional value of the forage. Full-scale comparisons with a limited number of the most promising mixtures are also carried out with farmers. In particular, we wish to evaluate the advantages and disadvantages of sainfoin in comparison with alfalfa. The aim is to suggest suitable formulas for fairly dry, low-intensity conditions for various classes of animal, particularly small ruminants.



Sainfoin in flower in a mixture with grasses.

2. Optimisation of Grass-Based Dairy Production



Optimising pasture management thanks to weighted plots

Our activities take place within a network of dairy farms in the canton of Vaud, with the following two objectives:

- 1. To optimise the value of the grass in the spring.** Temperature measurements could turn out to be very useful for determining the best date for mowing in the various thermal zones and for specifying the value of conserved forages in the feeding plans. Initial results show a good correlation between the sum of the temperatures and DM-yield. The phenology and nutritional value of grasslands seem equally well linked to this easily measurable parameter. Moreover, in spring the temperature effect is clearly differentiated between grasslands less than three years old and permanent grasslands.

2. To mitigate the drop in production of pastures in summer. Our grass growth measurements contribute to the development of agro-climatic models. An indicator for dry years and for losses in forage production can be established. Drought simulations with growing tunnels allow us to

consolidate the model and to take account of expected climate changes. The findings are used to devise adaptation strategies within the network of herders. Pasture management and dairy-cow feeding are examined in collaboration with various partners.

3. Response of Grasses to Climate Change

The two main objectives of our tests are:

- To supply agronomic standards and guidelines for the adapted management of pastures in a drought situation.
- To identify the ecological mechanisms involved with plants in a drought situation, with a view to understanding what factors contribute to the resistance and resilience of plant communities that are submitted to climate changes.

To this end, we simulate drought situations by means of growing tunnels (plastic roofs which intercept the rain) in order to compare the effects of a water shortage on grasslands managed more or less intensively. The project is conceived around different fields of knowledge: agronomy, community ecology (functional approach), ecophysiology, and bioclimatology.

The observations made in 2014 have allowed us to develop a methodology in which various water-supply scenarios are tested under a tunnel, i.e. in comparable ambient conditions. A project (GrassAlt) funded by the SNSF focuses on the

monitoring of three pastures in the Jura situated along an altitudinal gradient. It aims in particular at comparing the vulnerability to drought of mountain and lowland pastures.



Droughts are simulated with the help of growing tunnels.

4. Pasture in Marginal Zones



The rich flora of alpine pastures is threatened by shrub encroachment.

In Switzerland, many summer pastures are threatened by reforestation. The dynamics of the succession processes is often poorly understood. In order to deepen our knowledge in this field, a monitoring network was set up in 2014 on around twenty mountain pastures in the cantons of Vaud and Valais. The objectives of this network are (i) to establish a typology of the situations of under-use; (ii) to describe the relationships between management practices, environmental factors and the development of the different vegetation features; and (iii) to evaluate the effectiveness of the control measures. Botanical surveys have shown the exceptional richness of the environments 'in transition' (nearly 300 plant species observed). They have also confirmed the importance of agricultural management for the long-term preservation of this biodiversity. From this perspective, the evaluation of the control measures is important.