

Agroscope

Ruminants & Pigs Research Division

Grazing Systems

Project status 2015

1. Varietal Recommendations and Development of Mixtures

The variety testing of forage plants is a legal task that has consequence for the choice of seeds commercialized in Switzerland. The new varieties are regularly tested in comparative trials in which the agronomic value is evaluated in different environmental conditions. Our testing-network comprises 6 to 8 sites distributed in whole Switzerland. Three of these sites (Changins, Goumoens-la-Ville and La Frêta) are managed by our group. In 2015, we have set up trials in spring with three species : cocksfoot (24 varieties), festulolium (15 varieties) and brome (4 varieties). On the other hand, the variety trials placed in 2013 and 2014 with timothy (24 varieties), early perennial ryegrass (18 varieties) and late perennial ryegrass (51 varieties) have been continued in the three trial sites. The varieties have been evaluated on the dry matter yield (4 to 5 weighted cuts per year) and on several other characteristics (visual observations: juvenile development, general impression, persistence, disease resistance, competitive ability, winter resistance and tolerance to altitude). The results of the trials 2012-2014 with hybrid ryegrass (27 varieties) , Italian ryegrass (38 varieties) and tall fescue (20 varieties) have been presented to Swiss-Seed (Swiss Association for seed trade and plant breeder's rights) and published in three articles in Agronomic Research of Switzerland. On the second of October, Agroscope has organized the traditional Swiss-Seed-excursion in La Frêta and Changins.

The revision of the standard mixtures is based on the actualization of the recommended varieties as well as on the requests from the field. In 2015, we continued and finished the two trial-series concerning the development of seed-mixtures

containing sainfoin or birdsfoot trefoil. These trials have been set up in 2013 in Changins, Goumoens and La Frêta. The examined aspects were botanical composition, persistence, yield and nutrient content. Tests on the ensilability and measurements of condensed tannins have been performed. The aim is to offer mixtures that are suitable for dry conditions and less intensive production (no fertilizer) for small ruminants or other categories of animals. Two recipes for mixtures with sainfoin have been used for comparative trials at farmers in the context of the project milClim. These trials will allow us to evaluate the aptitude of the mixtures in practical conditions.



Swiss-Seed-Exkursion (October 2015, La Frêta)

2. Grass-Based Dairy Production

Within a network of dairy farms (<http://www.progres-herbe.org/>), grassland plots are followed in order to optimize regional forage autonomy. The measurements taken in 2014 (wet) and 2015 (dry) illustrate the variation in herbage production. These data allow calculating meadows and pasture surfaces for the needs of the herds.

With the project supported by the Federal Office for Agriculture 'Adaptation of forage production to climate change', various experiments were conducted in the Jura. References to the management of grassland in drought conditions are established. Several adaptation measures are taken into account:

- Diversify forage crops: seeding a part of surfaces with mixtures adapted to drought (alfalfa, orchardgrass, tall fescue, immature grain-legumes, sorghum)
- Stagger the dates of planting corn and catch crops
- Preserve the permanent meadows and pastures.
- Value grass in spring and autumn. The observation of the phenological stages carried out since 1995 in western Switzerland show an earlier start of vegetation in the spring (6 days earlier in 20 years in plain)
- Integrate the effects of drought: Do not mow dry grass (wait for it becomes green again), not N- fertilizer, let grow clover rich plots in late spring to graze in the summer, if possible irrigate grasslands (they value more water than corn).
- Collaborate between plain (breeding) and mountain (milk).



Meadow experiment (July 2015, Puidoux)

3. Impacts of drought on pastures

The aim of the Grass'Alt project is to explore the responses to drought of different grasslands along an elevation gradient. Two factors are tested: intensity of use and watering regime. Drought is simulated under rain shelters, either in spring or in summer, in order to precise the impacts on the agronomical services. The observations deal with agronomy, functional ecology, plant ecophysiology and bioclimatology.

The first results show that drought had more impact in the sites located at low and intermediate elevation, compared to the highland site. Moreover, the relative reduction in yield caused by the drought was more pronounced in summer than in spring. Finally, our experiments show overall a very good resilience of the grassland ecosystems.



Various precipitation scenarios (April 2015, Chésereux)