

Long term results for the naturalisation of river valley grassland in the lower floodplains of the river Oder

G. Schalitz and A. Behrendt

Centre for Agricultural Landscapes and Land Use Research Müncheberg, Research Station, Gutshof7, 14641 Paulinenaue, Germany, Email: fspaul@zalf.de

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Introduction The flooded grassland area in the lower reaches of the River Oder covers about 10,000 ha, of which 4,000 ha are situated on the German side and the remainder in Poland. In spite of extreme flooding conditions (annual winter flooding from 15 Dec. to 15 April and occasional summer flooding) the area was used very intensively in GDR times. After the political change in 1989, the management of the cross-border German-Polish National Park, which was situated in this area, was changed abruptly to extensive grassland utilisation. This paper reports on changes in the composition and productivity of the grassland.

Material and methods The development and composition of grassland in the experimental area has been scientifically assessed since the end of the 1960s with plant community evaluations after Klapp and investigation of yield and quality in several plot and field experiments (Schalitz, 2003).

Results and discussion Before intensification there were diverse plant communities on the heavy clay soil. Due to the extreme flooding conditions they were less species-rich than normal grassland swards. With the increase in intensification since 1970 (involving N fertiliser application up to 360 kg N/ha, three cuts and intensive pasture) only two plant communities remained: *Alopecuretum pratensis* (Meadow foxtail meadow) and *Phalaridetum arundinacea* (Reed canary community).

The foxtail meadow lost its original abundance of species, whereas *Agropyron repens* in some places increased its part of the yield up to nearly 90 %. In spite of high fertilisation, yield did not increase any more and fodder quality stagnated or decreased. The reed canary community, formerly rich in *Carex species* and herbs, became a high yielding monoculture due to nitrogen. Annual yield from three cuts reached 10 t DM/ha with the production of good quality conserved silage and hay. After the change to complete extensification in 1990 (no fertilization, one or two cuts, two grazing rotations) about 15 years were needed to recover the original combination of plant species. In the dryer areas of *Alopecuretum pratensis* (50-90 cm groundwater level in summer) there has been a very positive development of the sward with increases in *Alopecurus pratensis*, *Poa pratensis* et. *trivialis*, *Vicia cracca*, *Trifolium repens*, *Leontodon autumnale* etc. Yields on the fertile soils scarcely decreased. Table 1 indicates energy contents and yields with extensive management

Table 1 Guideline for energy content and energy yield of naturalised *Alopecuretum pratensis* with extensive utilisation on the fixed date of 1 June

Sites in flooding area	Dry matter yield (t/ha)	Net energy content, NEL (MJ/kg DM)	Net energy yield (MJ/ha)
Dry to fresh	4.4	6.6	29,040
Fresh to moist	4.7	6.2	29,140

In wet zones of *Phalaridetum arundinacea*, *Carex species* spread massively, as well as herbs including *Senecio aquaticus*, *Rorippa amphibia*, *Ranunculus repens*, *Polygonum amphibium*, *Lythrum salicaria*, *Lysimachia vulgaris*, *Eleocharis palustris*, *Barbarea stricata*, *Caltha palustris*, *Cardamine pratensis*, *Thalictrum flavum* and many others. Because of these changes there was a drastic decrease in fodder quality. The establishment of the National Park was mainly carried out to achieve total reservation, particularly to provide a reservoir for the birds *Acrocephalus schoenobaenus* and *paludicola*. Consequently these areas are no longer in agricultural utilisation.

Reference

Schalitz, G. (2003). Vorschlag für einen Bewertungsrahmen Grünland in den Überflutungspoldern des Deutsch-Polnischen Nationalparks. Amt für Flurneuordnung und ländliche Entwicklung, Prenzlau.