Aboveground production of a wet meadow stand dominated by Carex acuta

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Introduction

This work was part of a broader study aimed at evaluating the carbon budget in a model wetland ecosystem, Mokré Louky (Wet Meadows) near Třeboň (Czech Republic). The work has focused on aboveground biomass production of Carex acuta, which dominates vegetation in the unmanaged and the permanently flooded part of the Wet Meadows.



Fig. 1: Flowering *Carex acuta*

Methods

different times.

Destructive sampling was used to investigate the seasonal dynamics of aboveground biomass. The biomass was sampled repeatedly during the vegetation season in two- to four-week intervals. Five to nine successive harvests were taken in each of the six growing seasons studied (2006-2011).

edae vegetatio





Locality

The Wet Meadows is a flat depression of 450 ha. It is a marginal wetland located between the eastern edge of the town of Trebon and Rozmberk fishpond. Most of the area is regularly mown and fertilized. The exception is the northernmost part of the Wet Meadows where there is no access for agricultural equipment owing to high water levels. This part of the Wet Meadows is covered with tall sedges such as Carex acuta and Carex vesicaria. Glyceria maxima grows in the wettest area near Rožmberk pond.



Fig. 6: Sampling scheme in Fig. 5: Sampling scheme in 2008-2011: Different letters 2008-2011: Four plots were indicate plots sampled at harvested in both the drier (A) and the wetter part (A1) of the habitat, respectively.

meteorology

Fig. 7: Sampling fork of 0.5 x 0.5 m

Results and Discussion

Shoots of the spring cohort began to grow in late March (Graph 1). The tillers reached half of their length about day 150 (end of May) and their seasonal maximum length about day 210 (end of July). A similar dynamics was observed also for the growth in dry weight (Graph 2).





Graph 2: Seasonal course of dry weight of one spring tiller of Carex acuta



length of spring tillers of *Carex acuta*

The seasonal maximum of aboveground biomass was 529 to 670 g.m⁻² (Graph) 3). The highest seasonal maximum of aboveground biomass of Carex acuta (reaching 618 g.m⁻²) as well as the highest shoot density (553 m⁻², Graph 4) was found in 2008, a year with rich but regular precipitation throughout the spring. Conversely, the highest seasonal maximum of aboveground biomass of accompanying species (346 g.m⁻²) was found in 2010, when precipitation was below the long-term average.



biomass

Graph 4: Seasonal maximum of total (both live and dead) shoot density of Carex acuta

Conclusion

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The aboveground production was stimulated by abundant precipitation in spring (in 2008). The proportion of accompanying species increased in dry years.





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