

Fatty acid composition of different grassland species



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Introduction

The objective of this study was to investigate the influence on fatty acid composition of different grassland species, which were cut at different dates in the first growth as well as in a regrowth.

Materials and methods

The fatty acids composition of eight grassland species was investigated. Forage of the first growth and the third regrowth (second regrowth for one species) was harvested at three different dates. All species were grown in Posieux (altitude 650 m a.s.l.).

Results

In the first growth, the sum of total fatty acids, α -linolenic acid, linoleic acid and palmitic acid were significant between the different species and cutting dates (Figure 1). The highest fatty acid concentrations were found in the young forage of the first growth.

In the third respectively second regrowth, the fatty acid composition between the different species and cutting dates also differed significantly (Figure 2).

The crude fibre content correlated negatively with the sum of the fatty acids ($r=-0.76$), C16:0 ($r=-0.75$), C18:2 ($r=-0.40$), C18:3 ($r=-0.71$).

In contrast, the crude protein content and the sum of the fatty acids ($r=0.78$), C16:0 ($r=0.74$), C18:2 ($r=0.23$), C18:3 ($r=0.86$) correlated positively.

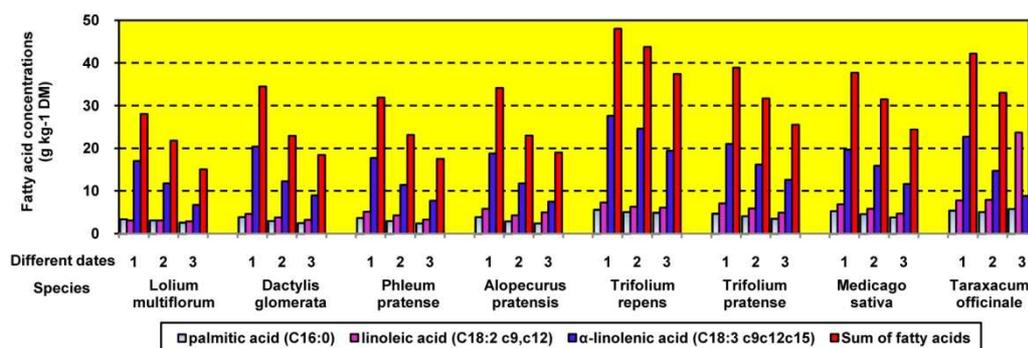


Figure 1. Fatty acid concentrations in eight species and three cutting dates of the first growth

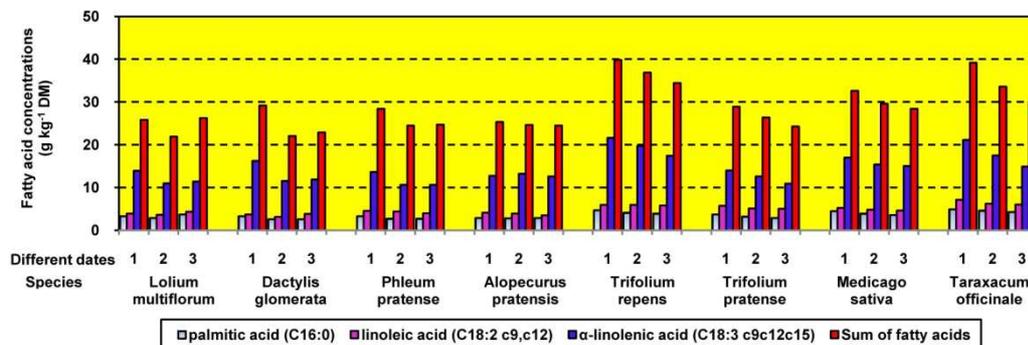


Figure 2. Fatty acid concentrations in eight species and three cutting dates of the third regrowth respectively second regrowth for *T. officinale*

Conclusions

- The fatty acid concentrations differ between plant species. Legumes, especially *Trifolium repens*, contain more fatty acids than grasses.
- An import factor for the fatty acid composition is the age of the forage, especially in the first growth.
- α -linolenic acid is the dominant fatty acid in grass.
- *T. Officinale* was an exception. High amounts of linoleic acid were produced in the older forage of the first growth.



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