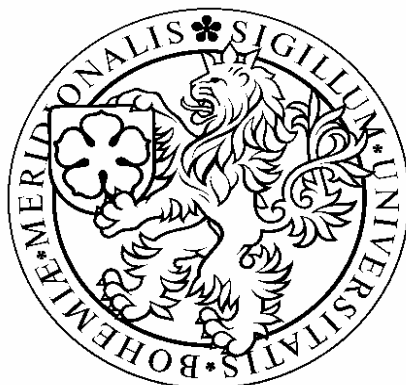


**Jihočeská univerzita v Českých Budějovicích
Přírodovědecká fakulta**



Rigorózní práce

**POSITIVE RELATIONSHIP BETWEEN PLANT
PALATABILITY AND LITTER DECOMPOSITION
IN MEADOW PLANTS**



Mgr. Kateřina Pálková

**České Budějovice
2008**

Rigorózní práce

Pálková K. (2008): Positive relationship between plant palatability and litter decomposition in meadow plants [RNDr. Thesis, in English]. - 11 p., Faculty of Science, University of South Bohemia, České Budějovice, Czech Republic.

Annotation:

We assessed the palatability of 20 meadow plant species to a generalist slug *Arion lusitanicus* in an aquarium grazing experiment and detritus decomposition rate in a field litter-bag test. The two characteristics are positively correlated and the relationship is strengthened by phylogenetic correction. The relationship was strongest for the decomposition rates during the first three months of exposition, but weakened when the exposition period was from six months to a year. Palatability was negatively affected by plant carbon content, but no relationship was found between plant palatability and nitrogen content. Similarly, only the relationship of litter decomposition with litter carbon content was significant. The regression tree method was used to detect the influence of species traits on species palatability and detritus decomposition rate. In general, leaf dry matter content, litter carbon content and seed weight were chosen as the best predictors of plant palatability response. Results for the detritus decomposition rate response mainly reflect supporting or defensive structure contents. Litter carbon content, seed weight and plant height are the most apparent common predictors of these variable responses.

Prohlášení:

Prohlašuji, že jsem svou rigorózní práci vypracovala samostatně, pouze s použitím pramenů a literatury uvedených v seznamu citované literatury.

Prohlašuji, že v souladu s § 47b zákona č. 111/1998 Sb. v platném znění souhlasím se zveřejněním své rigorózní práce, a to v úpravě vzniklé vypuštěním vyznačených částí archivovaných Přírodovědeckou fakultou elektronickou cestou ve veřejně přístupné části databáze STAG provozované Jihočeskou univerzitou v Českých Budějovicích na jejích internetových stránkách.

V Hájí ve Slezsku - Chabičově dne 22. 2. 2008.

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Kateřina Pálková

Vyjádření spoluautora (Community Ecology 9(1): 16-26, 2008):

Podíl Kateřiny Pálkové odpovídá její pozici prvního a tedy hlavního autora. Provedla sama veškerou experimentální práci, v ostatních oblastech (analýza dat, formulace do článku) je její podíl nadpoloviční a zcela zásadní.

.....
Prof. RNDr. Jan Lepš, CSc.

Souhlas spoluautora se zahrnutím článku do rigorózní práce:

Se zahrnutím článku do rigorózní práce souhlasím.

.....
Prof. RNDr. Jan Lepš, CSc.



Positive relationship between plant palatability and litter decomposition in meadow plants

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Keywords: Carbon, Detritus decomposition rate, Grazing, Herbivory, Nitrogen, Slugs, Species traits.

Abstract: Physical supporting or defense structures of plants, which decrease palatability, remain in plant tissue after a plant's death and so decrease detritus decomposition rates. Consequently, palatability and detritus decomposition rate are expected to be positively correlated. Carbon is the main component of these restricting structures, whereas nitrogen is expected to increase plant attractiveness for herbivores. In this study, we tried to confirm the expected positive relationship between palatability and detritus decomposition rate and to find the species functional traits that are responsible for this concordant response. Some traits are shared by species as a consequence of their common phylogenetic history; consequently, we also studied the effect of phylogenetic correction on the expected relationships.

We assessed the palatability of meadow plant species to a generalist slug *Arion lusitanicus* in an aquarium grazing experiment and detritus decomposition rate in a field litter-bag test. The two characteristics are positively correlated and the relationship is strengthened by phylogenetic correction. The relationship was strongest for the decomposition rates during the first three months of exposition, but weakened when the exposition period was from six months to a year. Palatability was negatively affected by plant carbon content, but no relationship was found between plant palatability and nitrogen content. Similarly, only the relationship of litter decomposition with litter carbon content was significant. The regression tree method was used to detect the influence of species traits on species palatability and detritus decomposition rate. In general, leaf dry matter content, litter carbon content and seed weight were chosen as the best predictors of plant palatability response. Results for the detritus decomposition rate response mainly reflect supporting or defensive structure contents. Litter carbon content, seed weight and plant height are the most apparent common predictors of these variable responses.

In general, our study confirmed the positive relationship between plant palatability and detritus decomposition. Both plant tissue grazing and detritus decomposition are slowed down by plant tissue supportive structures, manifested as high dry matter content or high tissue carbon content.

Ke dni 22.2. 2008 je publikace v tisku.