Effect of fertilizer on composition of weed community in barley fields

Source of data

Data are included in a book Šmilauer & Lepš (2014) in Case study 3, and originally were published by Pyšek & Lepš (1991)

Description of the dataset

The experiment was focused on diversity and species richness of weed communities in barley fields after application of industrial fertilizers. The experiment was originally established as a part of hydrobiological research, and for practical reasons it was not established using properly randomized design - individual plots are practically pseudoreplications, but for the purpose of this exercise we ignore it.

All together 122 plots of the size 1 m^2 were fertilized by three different fertilizers (for the purpose of this study the types of fertilizers are not distinguished), and on each plot species composition of weed community was recorded (with species covers estimated using ordinal scale from 1 to 7). Fertilizing simultaneously influences also growth and cover of barley, and the cover of barley can in turn also influence species composition of weeds; for this reason, the barley cover in the plot was also recorded.

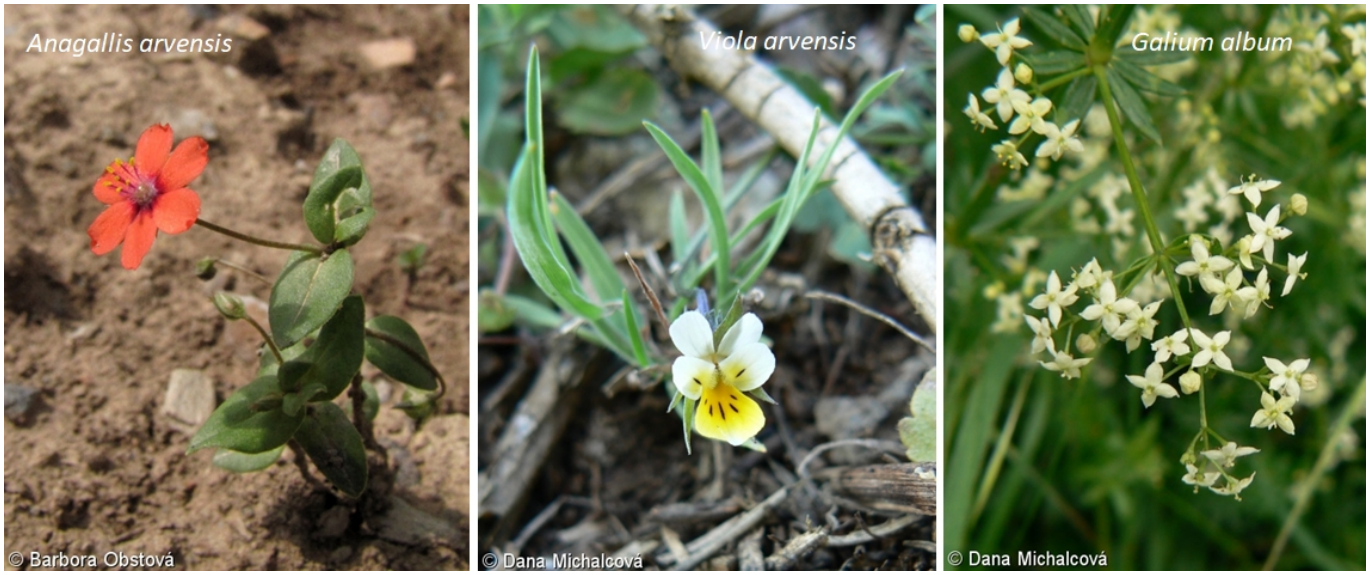

Figure 1: Examples of weeds occurring together with barley in the field (photographs from www.botanickafotogalerie.cz, credit go to authors).

Lokalita

Close to the village Samšín in South Bohemia, elevation 500 m a.s.l. For further details, see Pyšek & Lepš (1991).

Environmental variables

Here we are using simplified dataset without distinguishing the types of fertilizers - we distinguish only the dose.

Variable name	Description
dose	dose of fertilizer (0 - not fertilized, 1 - 70 g N/ha, 2 - 140 g N/ha)
cover	estimated cover of barley [%]
NSP	number of weed species in the plot

Data for download

File name	File type	Description
fertil.xls	Excel file	Contains species data, environmental data, design of experiment and other information (file from supplementary materials to the book of Šmilauer & Lepš (2014), Case study 3)

Script for direct import of data to R

```
fertil.spe <- read.delim
('https://raw.githubusercontent.com/zdealveindy/anadat-r/master/data/fertil.spe.txt
', row.names = 1)
fertil.env <- read.delim
('https://raw.githubusercontent.com/zdealveindy/anadat-r/master/data/fertil.env.txt
', row.names = 1)
```

References

- Pyšek P. & Lepš J. (1991): Response of weed community to nitrogen fertilization: a multivariate analysis. *Journal of Vegetation Science*, 2: 237-244 pdf
- Šmilauer, P. & Lepš, J. (2014) *Multivariate Analysis of Ecological Data using Canoco 5.* Second Edition. Cambridge University Press, Cambridge, UK.online supplementary data - Chapter 14 (Case Study 3)

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