Winter resistance of pasture weeds
*Rumex obtusifolius* and *R. crispus*

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Rumex crispus
Rumex obtusifolius
Rumex obtusifolius

Aims of study ~ questions

1) Is there any effect of N, P and K availability on emergence of *R. crispus* and *R. obtusifolius*?

2) How is the performance (number of leaves, height of plants and number of stems) of the investigated species affected by different N, P and K availability?

3) How is the winter mortality different between both *Rumex* species?
Materials and methods

- Season 2008 and 2009, 100 pots of 30 l, 300 plants
- Clay soil, outdoor conditions, no frost protection
- Mean annual temperature was 8.2 °C
- Mean annual precipitation was 422 mm
Control, N1, N2, P1, P2, K, N1P1, N1P1K, N2P1K, N2P2K

N1 = 150 kg N/ha, N2 = 300 kg N/ha, P1 = 40 kg P/ha, P2 = 80 kg P/ha, K = 100 kg K/ha
Results – field emergence

- N2 – low field emergence of *R. obtusifolius* and *R. crispus* seedlings
Results – field emergence

*R. crispus*

*R. obtusifolius*
Results – field emergence

• **P1 and P2** – high field emergence of *R. obtusifolius* and *R. crispus* seedlings
Results – growth during the vegetation season – length of the longest leaves

- **P** – higher concentration helps seedlings to grow faster and to develop faster

**R. obtusifolius**

**R. crispus**

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Results – growth during the vegetation season – number of stems x growing points

- P – higher concentration helps seedlings to grow faster and to develop faster and more stems.

### Graphs

**R. obtusifolius**

**Number of stems**

**R. crispus**

**Number of growing points**
**Results – generative reproduction 1\textsuperscript{st} year**

*R. obtusifolius* - flowers and seed production within 1\textsuperscript{st} year

*R. crispus* - only basal rosettes with high number of leaves
Results – mean winter survival

Winter 2008/2009
18% - *R. obtusifolius*, 100% - *R. crispus*

Winter 2009/2010
0% - *R. obtusifolius*, 100% - *R. crispus*
Results – mean winter survival

*R. obtusifolius*

*R. crispus*
Conclusions

1) Both *Rumex* are known as nitrophilous species, but they are not nitrophilous during the germination and seedling stage

2) *Rumex obtusifolius* can produce seeds during 1\textsuperscript{st} year, but *R. crispus* after over wintering in 2\textsuperscript{nd} year

3) *Rumex crispus* is more tolerant to frost in comparison to *R. obtusifolius*
Thank you for your attention

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