

Simulated herbivory in 19 meadow species – comparative analysis

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WHY?

Herbivory has large effect on functioning of populations and ecosystems. But besides that it also has evolutionary consequences. If we focus on defoliation, a common form of herbivory, we already know that plants either evolve to **compensate the damage by growth** or to defend.

Depending on the environment and evolutionary history the plants vary in compensation growth or they even overcompensate. But the rate of compensative growth can also be connected with some traits or some families can only show specific reaction.

Do species sometimes react only to biomass removal or only to the removal combined with herbivory cues?

Do traits or phylogeny explain reaction of the species to herbivory (invertebrate)?

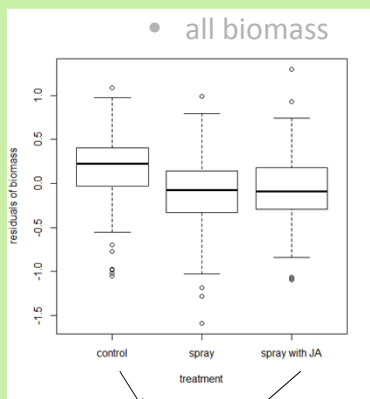
HOW?

- **19 species** from **7 families** grown from seeds in July 2014, overwintered, garden experiment in 2015
- **2 treatments** and a control
 1. no cutting
 2. half of the biomass cut, sprayed with water and a little of acetone
 3. half of the biomass cut, sprayed with water with **jasmonic acid** dissolved in acetone
- **3 types of cutting** depending on the shape of the plants (some unfortunately flowered already in spring)
 1. half of the stems
 2. half of the leaves
 3. both
- harvest in a month

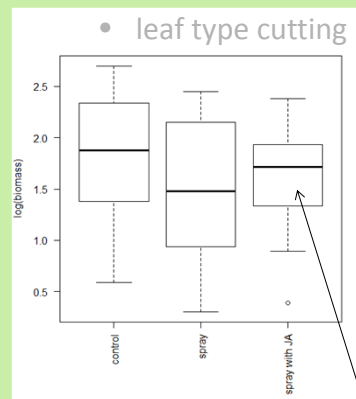
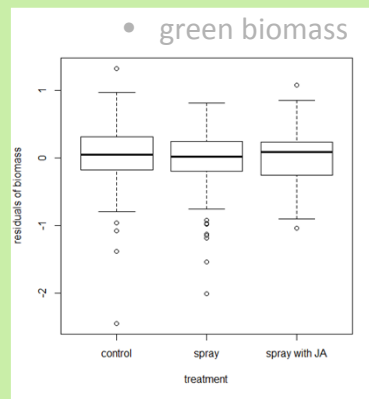


What came out?

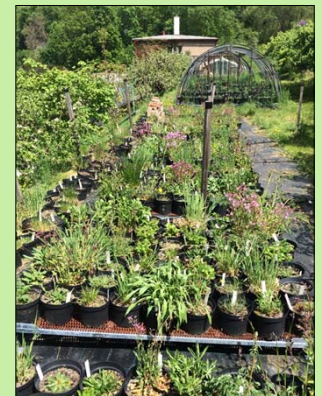
- not much compensation, reaction depends on cutting type



these differ

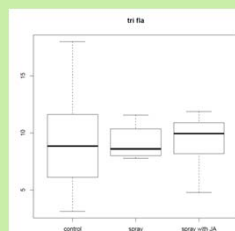
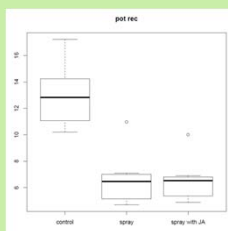
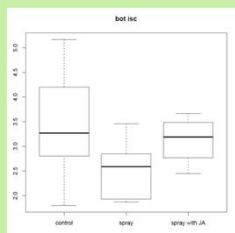
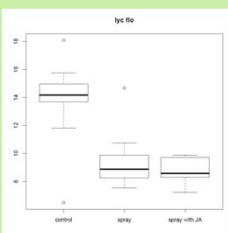


signal?



some species lose a lot

grass species compensate



Lessons learned

- results of such experiments strongly depend on **plant development, phenology** and probably also phylogeny – overwintering is therefore probably not a good idea
- **jasmonic acid** might work but probably more in younger tissues – might be worth trying another cue (caterpillar regurgitate?)
- more species and families are probably needed to get a more general picture
- stressed plants don't behave well (heat wave of 2015)