

Ramet turnover under differing water levels in *Vinca minor*

Clonality has many benefits among which the most important is the ability to **form new individuals** and sustain them until they have their own roots and can either split from the mother or share its resources with the interconnected system of ramets.

The question is what happens if the mother plant with not rooted daughter ramets faces stress, e.g. water stress?

Will it drop some shoots or shorten all? Which ones?

↓ we established an experiment to find out!

Four irrigation levels



1/16th (17 ml/d) **1/8th** (33 ml/d) **1/4th** (66 ml/d) **full** (267 ml/d)

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Lesser periwinkle (*Vinca minor*)

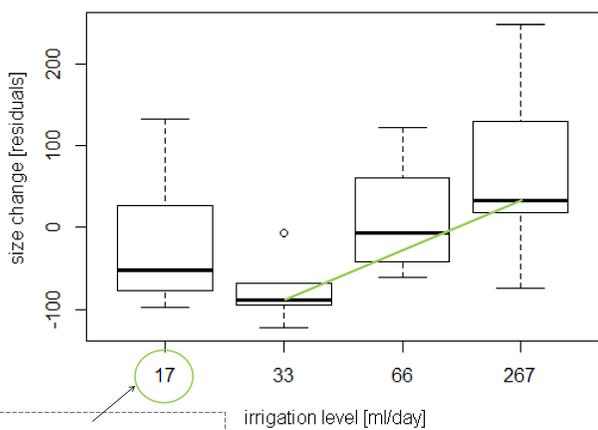
- highly clonal forest plant native to Europe and Asia, ornamental

Design

- plants were planted and grown in common garden for 1 year
- at the beginning of the experiment, shoots were trimmed if rooted and size of half of the shoots in each plant was measured, end marked
- plants were randomized and covered with open end greenhouse
- 7 plants were assigned to each water level, irrigated daily or each 2-3 days
- after 2 months the marked half of the plant was harvested and the growth/dieback of shoots was measured, grouped by shoot form



sig. (0.01) surplus in growing shoots



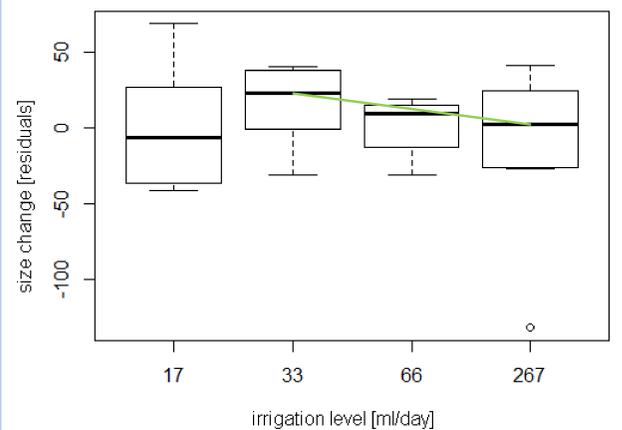
the lowest level behaves differently, see *

1) as expected, the more water the plants get, the more new shoots they grow (but it is not proportional to the water amounts)

2) less obvious is the fact that the most irrigated plants also lose the most length of the shoots

3) numbers of shoots have not changed significantly

length of dieback in wilting shoots



↓ we also classified the shoots by form and vitality

Vertical shoots

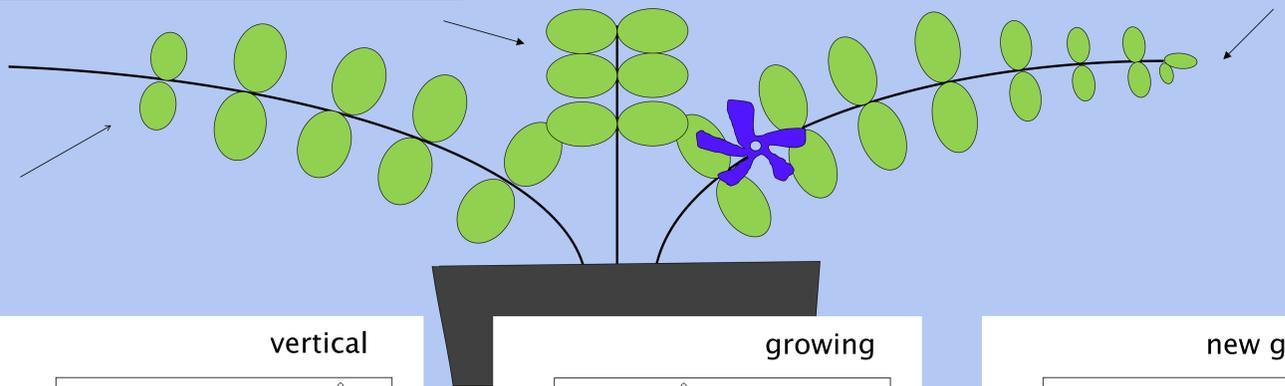
- shoots, that have larger leaves and don't grow anymore
- they are vertical but they can change to growing rarely

Growing shoots and new growing shoots

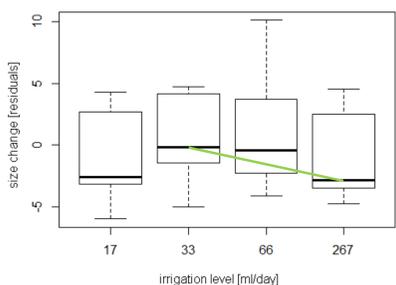
- horizontal shoots with young developing leaves
- they grow and root to form new plants eventually

Unpromising shoots

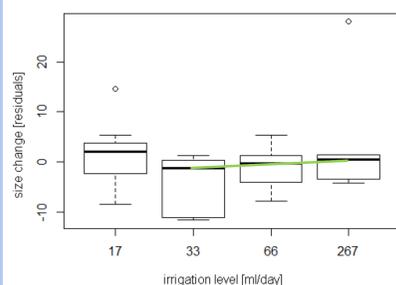
- shoots, that have started to die back (develop dry end) due to internal or external factors before the experiment



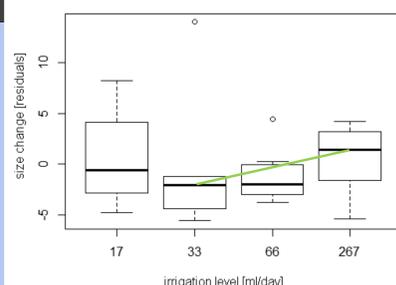
unpromising



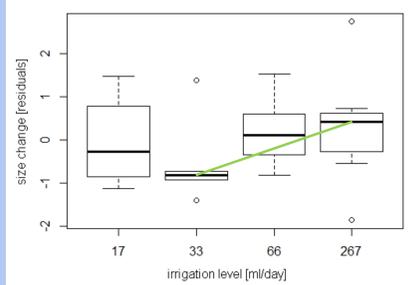
vertical



growing

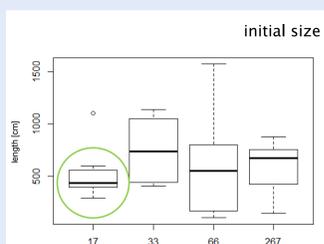


new growing



The problem of the lowest irrigation level *

- in all results the lowest irrigation level shows different reaction than the rest
- the plants (randomly) assigned to this treatment were smaller
- less water could have been sufficient for them
- not significant effect



The results show that the more water the plant gets, the more new stolons it creates.

Less irrigated plants drop less unpromising shoots than the well watered ones that can afford to lose them. Vertical shoots don't show any reaction to water availability.

Vinca minor can survive even very small amounts of water. Our smallest treatment (17ml/day) should have been even smaller.