

Response of specific leaf area to nutrient addition and competition release in *Cistus ladanifer* L.

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INTRODUCTION

- Variation in Specific Leaf Area (SLA = Leaf Area / Dry Leaf Weight) reflects strategies of plants to obtain resources in response to diverse environmental conditions.
- Within a species, sun-exposed individuals usually present lower SLA values than shaded ones. In addition, SLA has been reported to increase with experimental nitrogen supplementation.
- Such variation also occurs at the intraindividual scale, as leaves have different positions and angles in the crown



TARGET

To understand SLA variation among and within individuals in a population of *Cistus ladanifer* L. The hypothesis is that individuals would decrease SLA in response to the competition release treatment, and that would increase SLA in response to the nutrient addition treatment

METHOD

We tested the short-term response (11 months) of 100 adult individuals to increased nutrient availability and different levels of intra-specific competition. Specifically, we conducted a factorial field experiment with four treatments

100 INDIVIDUALS

TREATMENT 1: CONTROL
No nutrient addition and no neighbor removal

TREATMENT 2:
Nutrient addition and neighbor removal

TREATMENT 3:
Neighbor removal only

TREATMENT 4:
Nutrient addition only

Each treatment

25 INDIVIDUALS

Each individual

50 LEAVES

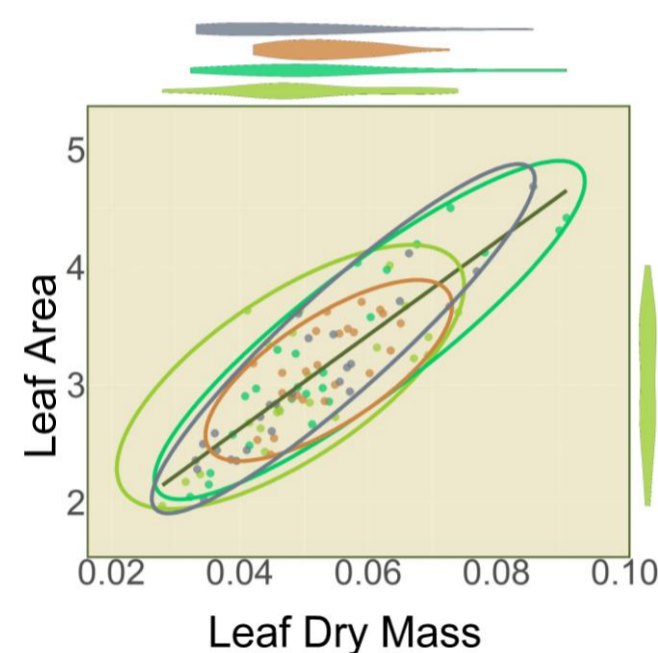
Measured on each leaf

- AREA
- DRY WEIGHT

SLA

RESULTS

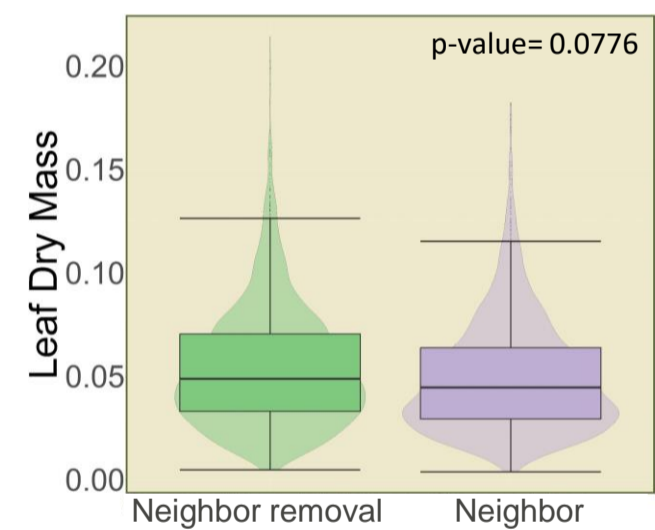
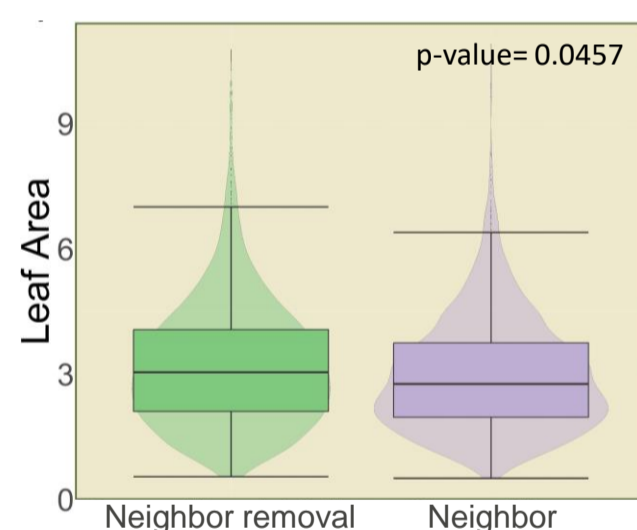
Treatment effects on Leaf Area and Leaf Dry Mass



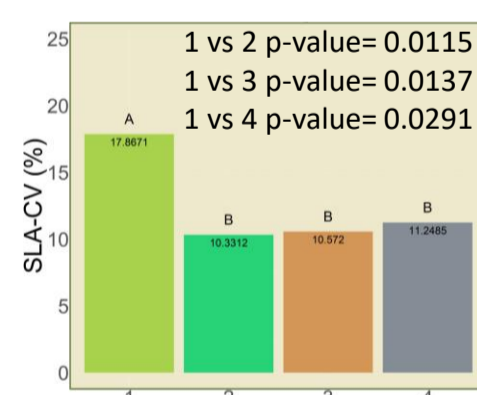
Results showed no effects of treatments on SLA. Neighbor removal increased leaf area and leaf dry weight. Linear mixed models selected following AICc criteria:

$\text{Leaf Area} \sim \text{Neighbor removal} + (1 | \text{Individual})$

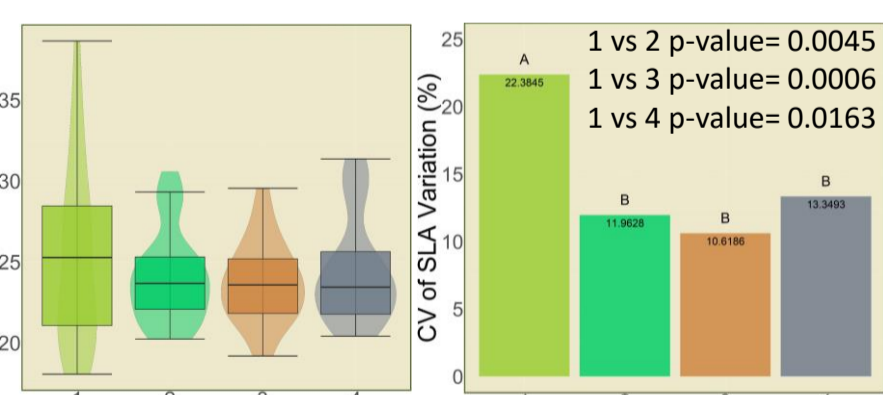
$\log(\text{Leaf dry Weight}) \sim \text{Neighbor removal} + (1 | \text{Individual})$



Interindividual variation



Intraindividual variation



CONCLUSION

- Neighbor removal increased Leaf Area and Leaf Dry Weight values, but average SLA values remained unaffected. No significant effect was detected for the nutrient addition treatment.
- Interindividual variation in average SLA values decreased with the application of any treatment. Individuals in the control group differed more in average SLA values among them than those from the treatment groups.
- Intraindividual variation in SLA decreased when any treatment was applied. Leaves within individuals of the control group differed more in SLA values than those within individuals of the treatment groups.
- Furthermore, individuals from the control group differed more in intraindividual variation of SLA than those individuals from treatment groups