Restoring soil functionality in degraded areas of organic vineyards

Preliminary results of the ReSolVe project in the French vineyards

Degraded soil areas in vineyards are associated with problems in vine health, grape production and quality. Different causes for soil degradation are possible such as poor organic matter content, lower plant nutrient availability, pH, water deficiency, soil compaction / lower oxygenation…

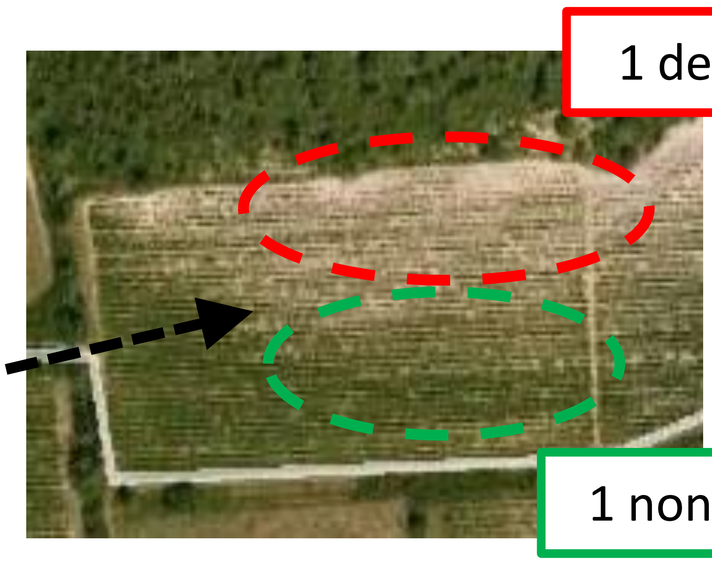
→ Lower functionality?

Château Maison Blanche (AOC Montagne Saint-Émilion)

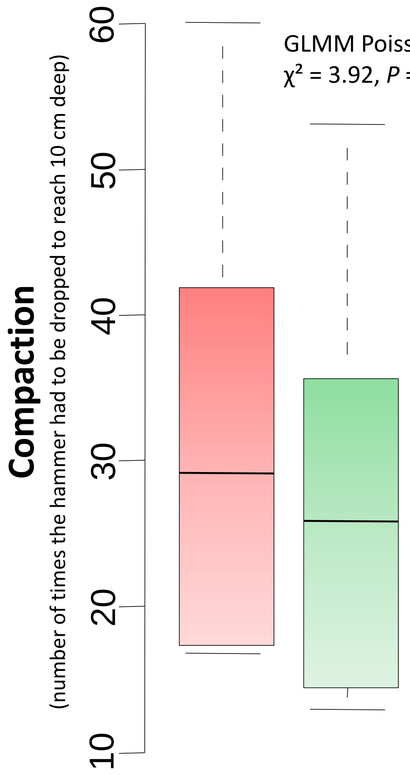
Château Pech Redon (AOC La Clape)

The aim of this preliminary study is to assess soil functionality (OM decomposition), biodiversity through mesofauna diversity and consequences for vine growth and quality.

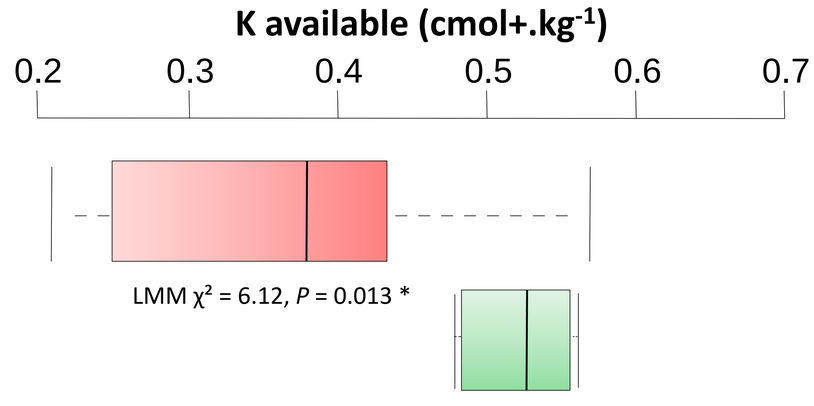
1 degraded area



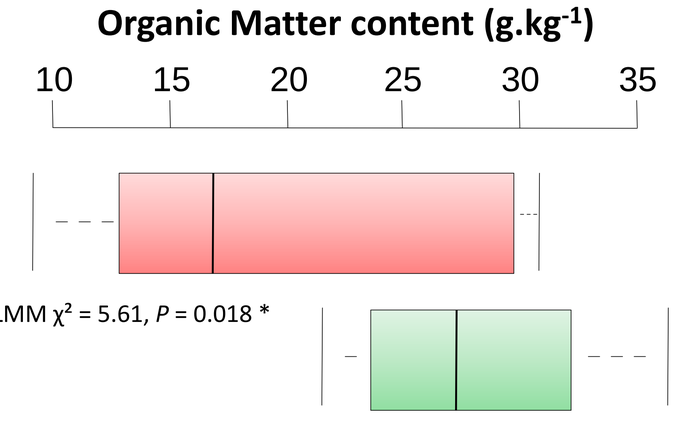
1 non-degraded area



GLMM Poisson
$\chi^2 = 3.92$, $P = 0.047$ *



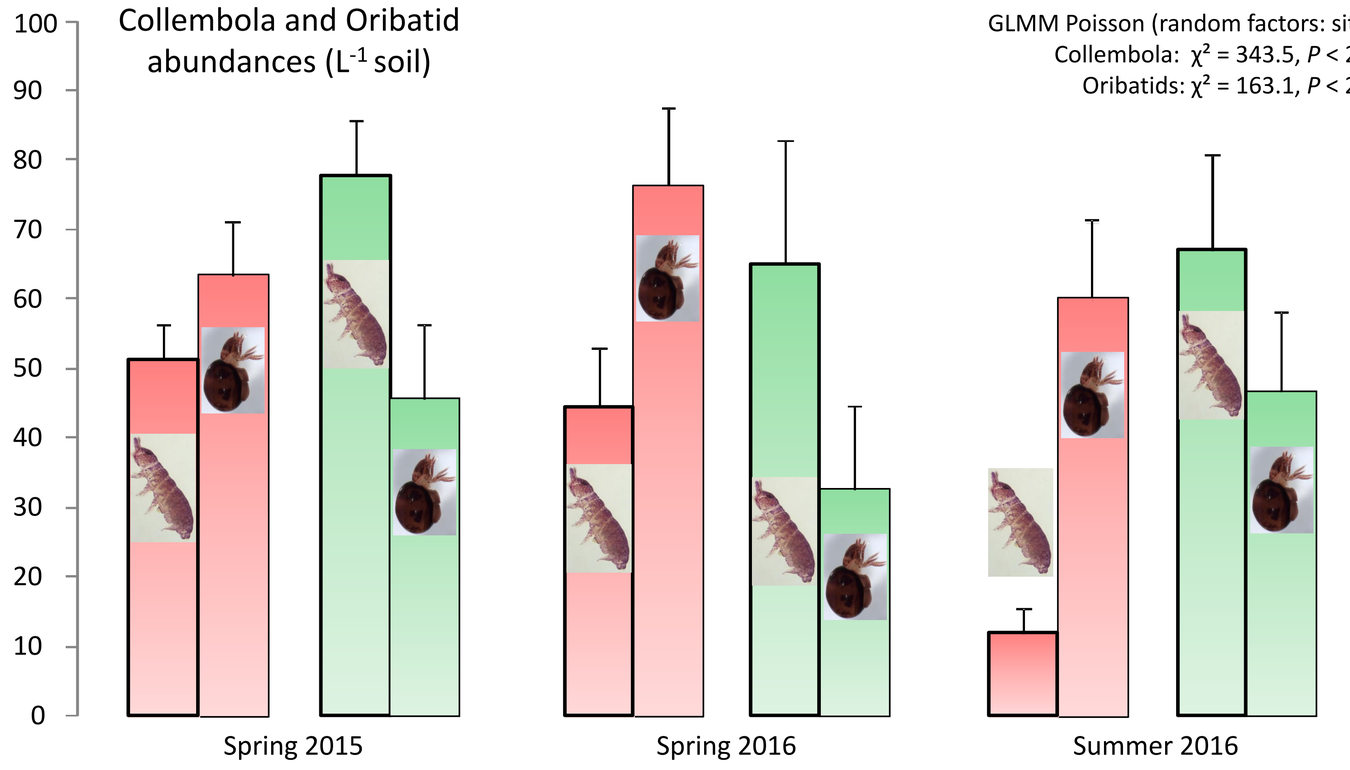
LMM $\chi^2 = 6.12$, $P = 0.013$ *



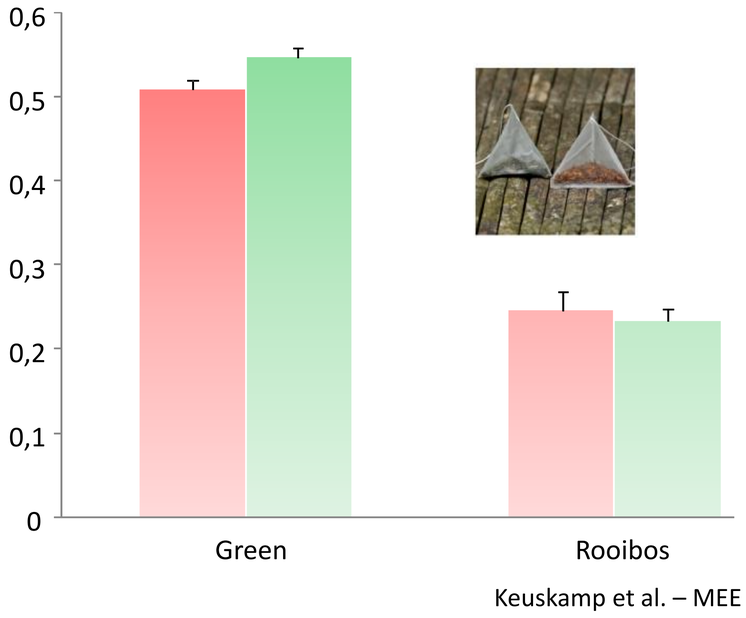
LMM $\chi^2 = 5.61$, $P = 0.018$ *

Degraded areas
→ **Oribatids more numerous** while **the reverse is true for Collembola**
→ **lower OM content** associated with **higher compaction** and/**decreasing nutrient availability** (Ca, K)
→ **lower decomposition rates** measured through tea bag weight loss

Restoration practices (winter sowing: mulching / green manures, compost adding) are discussed. Their consequences will be assessed in the following years (3 different treatments compared to a control plot in each degraded area).



GLMM Poisson (random factors: site/session)
Collembola: $\chi^2 = 343.5$, $P < 2x10^{-16}$ ***
Oribatids: $\chi^2 = 163.1$, $P < 2x10^{-16}$ ***



LMM - n≈140 in degraded areas / n≈35 in ND
Green tea: $\chi^2 = 3.88$, $P = 0.049$ *
Rooibos: $\chi^2 = 0.75$, $P = 0.38$ NS

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