



HAL
open science

Soil microbial community diversity increases resilience of pea plant after drought

Camille Sorin, Pierre-Alain Maron, Sylvie Girodet, Virginie Nowak, Gérard
Duc, Marion Prudent

► To cite this version:

Camille Sorin, Pierre-Alain Maron, Sylvie Girodet, Virginie Nowak, Gérard Duc, et al.. Soil microbial community diversity increases resilience of pea plant after drought. 2. International Legume Society Conference - Legumes for a Sustainable World, Legume Society., Oct 2016, Lisbonne, Portugal. 358 p. hal-01604102

HAL Id: hal-01604102

<https://hal.science/hal-01604102v1>

Submitted on 3 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - ShareAlike 4.0 International License



Legumes for a Sustainable World

ILS2 | Second International Legume Society Conference

11th - 14th OCT 2016
TRÓIA RESORT | PORTUGAL



UNIVERSIDADE
NOVA
DE LISBOA



P154 – S18

Soil microbial community diversity increases resilience of pea plant after drought

Sorin C., Maron P.A., Girodet S., Nowak V., Duc G., Prudent M.

Institut National de la recherche agronomique, INRA, UMR1347 Agroécologie, F-21065 Dijon cedex, France

We hypothesized that the stability (resistance and resilience) of pea production under drought may be enhanced with increasing the diversity of soil microbial communities. An experiment was conducted under greenhouse conditions where pea plants were grown during three months under three levels of soil microbial community diversity, obtained by a dilution approach. For half of them, a water stress was applied during two weeks at vegetative stage followed by a rewatering until the end of the growth cycle, while the other plants were well watered throughout the experiment. We measured traits reflecting plant development and growth, plant resource acquisition and allocation among compartments and seed production (i) after drought to evaluate the resistance of the plant, and (ii) at physiological maturity to evaluate the resilience of the plant. Our results show that the plant biomass depletion due to drought did not vary with the level of microbial diversity. Adaptation of root system and plant transpiration was dependent on the level of microbial diversity: under low diversity level, root traits and stomatal conductance were less affected by drought than under high diversity level. After rewatering, plants in interaction with a higher diversity level had a higher biomass, indicating a better resilience. Seed production was also enhanced by the higher microbial diversity level.

XX

2 weeks
condition?