René Guénon

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Degrees

2010 **Ph.D** of Paul Cézanne University (France) in Environmental Sciences (with Honours). Scholarship co-funded by the Agency of Environment and Energy Management (ADEME) and the Provence-Alpes-Côte d'Azur county and sustained by a European program (Forest Focus) and CNRS-national program (Ecological Engineering).

2006 **Master Recherche (Research Master Degree)** in Science of Earth Environment at Paul Cézanne University (France) obtained with honours.

2004 **Licence (Bachelor of Science Degree)** in Biology of Organisms at Paul Cézanne University (France), obtained with honours.

Research experiences, mentoring and teaching

Research

Since September 2013 (Post-Doc): "Litter decomposition in arid system: role of UVs in photodegradation and microbial ecology". Ferran Garcia-Pichell and Thomas A Day

April 2011 – March 2013 (Post-Doc): "Impact of short and very short rotation coppices on soil C, N and P cycling: a global and functional approach". Scientific supervisor: Isabelle Bertrand

October 2006 – September 2010 (Thesis): "Vulnerability of Mediterranean soils to recurrent wildfires and restoration of their chemical and microbiological quality by the addition of compost" Director of thesis: Raphaël Gros

September 2005 – September 2006 (Research Master Degree): "The role of mixed forest in the control of microbial diversity and dynamics of mineralisation of Mediterranean litter" Director of Research Master Degree: Raphaël Gros

April 2005 – June 2005 (Master Degree): "Microbial degradation of dairy manure in a depurative macrophyte system" Director of Master Degree: Raphaël Gros and A-M Farnet

Mentoring leading to the drafting of following final reports

Charlotte Corbeaux (2012): Bachelor of Science Degree trainees (IUT Béthune). Report: " Impact of short and very short rotation coppices of poplar and willow on soil microbial functions"

Benoit Turin and Laura Delaye (2009): Bachelor of Science Degree trainees (Paul Cézanne University). Report: "Restoration of chemical and microbiological quality of burned soils by the addition of compost"

Mélanie Carrara (2008): Research Master Degree trainee (Paul Cézanne University). Report: "Role of the post-fire vegetation in control of soil microbial activity"

Alexia Pailler (2008**):** Master degree trainee (Paul Cézanne University). Report: "Effect of condensed tannins of Cistus monspeliensis L. on microbial activities in burned soils"

Mélanie Carrara and Ali Bourguiba (2007): Master degree trainees (Paul Cézanne University). Report: "Fire recurrence affects soil microbial activity and stability to drying and rewetting events"

Alexia Pailler (2007): Bachelor of Science Degree trainee (Paul Cézanne University). Report: "Fire recurrence effects on soil enzyme activities"

Teaching

2009 - Lab work in soil microbiology (30 hours) for students in Master of Environmental Chemistry (Maeva), Paul Cézanne University

Scientific publications and Conferences

PUBLICATIONS

Redin M., **Guénon R.**, Recous S., Schmatz R., Liberalesso de Freitas ., Aita C., Giacomini . Carbon mineralization in soil of the roots of twenty crop species, as affected by their chemical composition and botanical family. Plant and Soil Accepted DOI 10.1007/s11104-013-2021-5

Guénon R., Gros R. 2013. Frequent wildfires and shortened time since fire affect the stability of soil microbial functions submitted to drying and rewetting events in a Mediterranean ecosystem. Soil Biology and Biochemistry 57, 663-674**.**

Guénon R., Vennetier M., Pailler A., Dupuy N., Roussos S., Gros R., 2013. Trends in recovery of Mediterranean soil chemical properties and microbial activities after infrequent and frequent wildfires. *Land Degradation and Development* 24, 115-128.

Guénon R., Vennetier M., Dupuy N., Ziarelli F., Gros R., 2011.Soil organic matter quality and microbial catabolic functions along a gradient of wildfire history in a Mediterranean ecosystem. *Applied Soil Ecology* 48, 81-93.

Guénon R., Ruaudel F., Gros R., 2007. Functional arguments for the conservation of mixed Mediterranean forest stands. Arguments fonctionnels pour la conservation de la mixité forestière méditerranéenne. *Ecologia Mediterranea* 33, 43-52.

Guénon R., Gros R. Increasing the maturity of compost used affects the soil chemical properties and the stability of microbial activity along a Mediterranean post-fire chronosequence. In progress

Guénon R., Gros R. The importance of compost quality to improve soil microbial functions along a Mediterranean chronosequence after frequent wildfires. In progress

Guénon R., Bastien JC, Thiébeau P., Bodineau B., Isabelle Bertrand I. Impacts of a two-year growth bio-energy plantation with poplar and willow on carbon and nutrient dynamics. In progress

Guénon R., Gros. R. Litter in mixed forest stand of aleppo pine and holm oak shows a greater biochemical diversity and microbial activities than monospecific stands. In progress

CONFERENCES and reports

Bertrand I., **Guénon R**., Thiebeau P., Amougou N., Recous S. Impact de la présence de cultures pérennes à vocation énergétique sur les cycles C, N et P dans les sols. "11èmes rencontres de la fertilisation raisonnée et de l'analyse - COMIFER-GEMAS -Poitiers-Futuroscope 20 et 21 novembre 2013"

Guénon R., Gros R. Consequences of the combination of frequent wildfires and drying-rewetting events on the soil microbial functions in a Mediterranean area. Eurosoil 2012, Soil Functions in a Changing Climate – Recent Insights from Field Experiments (S6.3) **Poster**.

Guénon R., Bastien J-C, Thiébeau P, Bodineau G., Bertrand I. Impact of short- and very short-rotation coppices of Populus and Salix species on soil C, N and P cycling. communication Eurosoil 2012, Forest Bioenergy and Soil Sustainability (W6.01). **Oral**

Guénon R., Dupuy N., Vennetier M., Ziarelli F., Gros R., (2009). "Effects of wildfire recurrence and drought in Mediterranean region on soil organic matter and microbial diversity". French congress organized by the French Organic Group/Network, January 2009. **Oral**.

Gros R., **Guénon R.,** Cecillon L., Vennetier M. (2008). "Fire history and ecosystem properties: from impacts to soil restoration strategies". Erasmus collaboration workshop, Democritus University of Thrace, Orestiada (Greece), 19-20 may 2008. **Oral**.

Gros R., **Guénon R.,** Pallier A., Cellier A., Bartolli F., Dupuy N., Doumenq P., Ballini C., Baldy V. & Gauquelin T. (2008). "Restoration of burned ecosystems: which quality of organic resources for which fire recurrences?" Ecological Engineering Symposium Program in Paris, March 31, and april 1st, 2009.

Guénon R., Ruaudel F., Bourguiba A., Carrara M., Vennetier M. et Gros R., 2007. "Fire recurrence: key factor in the soil microbial functioning in Mediterranean ecosystems. French congress of Microbial Ecology 2007, La Grande Motte. **Poster**.

Vennetier M. and Forest focus consortium, 2008. "Impact of repeated fires on functional biodiversity". International Union of Forest Research Organizations Conference 'Biodiversity in Forest Ecosystems and Landscapes', Thompson Rivers University, Kamloops, British Columbia August 5-8, 2008. **Oral**

Vennetier and Forest focus consortium, 2007. IRISE. "An experimental multidisciplinary research project to assess the Impact of Repeated Wildfires on Biodiversity and the Soil". Alter-net IP all parties meeting. Palma de Majorque, Espagne 5-9 Février 07. **Oral**

Guénon R. and Gros R. (2008) "A stressed life: implications in the resilience of Mediterranean burned ecosystems ". Workshop 'Current and past Wildfires', January 28 and 29, 2008, Besançon. **Oral**
Vennetier M., 12 authors, **Guénon R.,** and 37 authors (2008). Etude de l'impact d'incendies de forêt répétés sur la biodiversité et sur les sols : recherche d'indicateurs. Rapport final Règlement Européen Forest-Focus 2005 Regulation (EC) No 2152/2003 of the European Parliament and of the Council of 17 Nov 2003. 30p + 196 p d'annexes. **Final Report**

Guénon R. et al., 2013. Impact of short and very short rotation coppices of Populus and Salix species on soil C, N and P cycling. Helmisaari, H-S. & Vanguelova, E. (eds.). 2013. Proceedings of the Workshop W6.1 Forest bioenergy and soil sustainability at EUROSOIL Congress 2nd July to 6th July 2012, Bari, Italy. 72 p. www.oecd.org/agriculture/crp

Thiébeau P., Millon F., **Guénon R.,** Bertrand I. Dispositif de collecte de feuilles sénescentes de jeunes arbres cultivés en taillis à courte rotation. Le Cahier des Techniques de l'INRA 2013 (80) n°3.

Activity of Peer Review for International journals:

Plant and Soil, Soil Research, Biogeochemistry, Geoderma, Land Degradation and Development and Soil Biology and Biochemistry

Technics used

Microbial Ecophysiological Variables

Microbial cell counts,
Extracellular enzyme activities (FDAse, laccase, péroxydase, phenol oxidase, cellulase, β-glucosidases, proteases, phospho-mono-, -di- et -tri-esterases, ureases),
Net N mineralization (ammonification, nitrification) and net P mineralization
Catabolic profiles (Biolog® and MicroResp^{TM}) and microbial composition (PLFA)
Basal respiration and Substrate induced respiration (SIR)

Physico-chemical Analyses:

Organic matter content (loss on ignition), total organic carbon and total nitrogen (C/N elemental analyzer), pH in water and KCl, Water holding capacity and gravimetric water.
Available phosphorus (Olsen, Dyer), organic and total P, available N

Chemical (optical) fingerprint of living (plants) and dead organic matter (litter and soil):

Near, Mid infrared (NIR, MIR), UV spectroscopy and solid state ^{13}C-NMR spectroscopies

Extraction, purification and analysis of phenols, condensed tanins and terpenes in litters and soils

Laboratory:
Incubations, water and temperature control, C and N fertilisation

In situ:

Trenching plots: A vertical plastic membrane prevents the entry of roots and geotextile on the top removes the entry of litter. Permit to test the role of vegetation and interaction with soil microbes and functioning. Minimum of 1 year of evolution after construction
Litterbags: to assess litter decomposition in the field
Organic amendments (compost) with wood structure to prevent water erosion

IT skills:

-Personal Statistic softwares: R, Statistica, Excelstat, Unscrambler, Primer-e, SPSS, Canoco, Sigma Plot, Jump.
-Statistical analyses: Factorial ANOVA; PERMANOVA ; ANCOVA ; Co-inertia, PCA; RDA; Regressions (linear and multiples, stepwise, segmented, PLS), Design of experiment…

Miscellaneous

Driver's license

Private tuition (math, physics, biology)
Secondary and High School levels (2002 to 2006)

Associative activity:
Member of the French Association for the study of soils (AFES) and the French Society of Ecology (SFE)

Languages:
- English (fluent)
- Spanish (good)

Hobbies:
Music: guitar, bass guitar and battery.
Sports: tennis, mountain bike, jogging