



## EU cofin Project Final Report 2018

*The EU projects that receive co-finance from the top sectors must submit a technical and financial final report. This format is to be used for reporting the technical results. The report must be submitted to the TKI-bureau before March 1<sup>st</sup> 2019. For Wageningen Research this will be coordinated via a central point.*

<b>General information</b>	
TKI Number of the project	AF-EU-15021
Title	RECARE - Preventing and Remediating degradation of soils in Europe through Land Care
project leader WR (e-mail address)	At WENR (Alterra): Dr. R. Hessel. Overall project coordinator Prof. Dr. C.J. Ritsema (WU)
Address project website	<a href="http://www.recare-project.eu">www.recare-project.eu</a> (project website) <a href="http://www.recare-hub.eu">www.recare-hub.eu</a> (dissemination website)
Start date	1 Nov 2013
End date	31 Oct 2018

### **Short description/aim project** (this information can be published on a website of the TKI/Topsectors)

#### **RECARE summary**

Although there is a large body of knowledge available on soil threats in Europe, this knowledge is fragmented and incomplete, in particular regarding the complexity and functioning of soil systems and their interaction with human activities. The main aim of RECARE was to develop effective prevention, remediation and restoration measures using an innovative trans-disciplinary approach, actively integrating and advancing knowledge of stakeholders and scientists in 17 Case Studies, covering a range of soil threats in different bio-physical and socio-economic environments across Europe. Within these Case Study sites, i) the current state of degradation and conservation was assessed using a new methodology, based on the WOCAT mapping procedure, ii) impacts of degradation and conservation on soil functions and ecosystem services were quantified in a harmonized, spatially explicit way, accounting for costs and benefits, and possible trade-offs, iii) prevention, remediation and restoration measures selected and implemented by stakeholders in a participatory process were evaluated regarding efficacy, and iv) the applicability and impact of these measures at the European level was assessed using a new integrated bio-physical and socio-economic model, accounting for land use dynamics as a result of for instance economic development and policies. Existing national and EU policies were reviewed and compared to identify potential incoherence, contradictions and synergies. Policy messages have been formulated based on the Case Study results and their integration at European level. A comprehensive dissemination and communication strategy, including the development of a web-based Dissemination and Communication Hub, accompanied the other activities to ensure that project results were disseminated to a variety of stakeholders at the right time and in the appropriate formats to stimulate renewed care for European soils.

#### **RECARE aims**

To achieve the main aim of RECARE (see above) 8 main objectives were formulated:

1. Identify and fill knowledge gaps in our understanding of the complex functioning of soil systems under the influence of climate and human activities
2. Develop a harmonized methodology to assess the state of degradation and conservation in relation to different soil threats
3. Develop a universally applicable methodology to assess the impacts of soil degradation and related conservation measures upon soil functions and ecosystem services, including costs and benefits
4. Design, select, and implement in close collaboration with stakeholders, innovative prevention, remediation and restoration measures, and evaluate the efficacy of these measures regarding soil functions and ecosystem services as well as costs and benefits

5. Upscale results from the study site to the European scale using innovative simulation approaches to evaluate the applicability and effectiveness of measures across EU Member States, and associated countries
6. Evaluate constraints for, and ways to, facilitate adoption of these measures by stakeholders
7. Carry out an integrated assessment of existing soil related EU and national policies and strategies to identify their goals, impacts, synergies and potential inconsistencies, and to derive recommendations for improvement based on RECARE results
8. Disseminate project results to all relevant stakeholders, from land users to high level policy makers

**Description highlights and results** (this information can be published on a website of the TKI/Topsectors)

Soils are of crucial importance for the well-being of human society. Soils provide a wide variety of functions and ecosystem services (ES) including food and biomass production, buffering and filtering of water and contaminants, a physical base for construction, habitat, a source of materials, and storage of nutrients and carbon. However, soils are affected by various threats that cause their degradation. Soil degradation not only affects the soils, but also the ES they provide. Although practical management responses that address these threats exist, these are not always applied to their full potential. For most soil threats, the situation in Europe is still worsening rather than improving.

For this reason, the RECARE project was initiated in 2013. The overall aim of RECARE was to develop effective prevention, remediation and restoration measures against soil threats in Europe. As soil degradation problems are typically caused by the interplay of biophysical, socio-economic and political factors, all of which vary across Europe, these problems are by definition site specific and occur at different scales. Therefore, 17 case studies were included in RECARE to study the various soil threats that occur across Europe and to find appropriate responses using a stakeholder participatory process that combined both scientific and local knowledge.

RECARE started off with extensive reviews of knowledge available on soil threats, their status, the indicators that can be used to evaluate them, measures that could be taken and policies that have an impact on soil quality. This provided basic information needed to select specific measures in the case studies in a participatory process. The selected measures were then test-implemented, and their effects were monitored for 2-3 years, looking at the effect of the measures on soil threats, soil quality, ES and cost/benefit. Results were presented to, and discussed with, stakeholders during demonstration events and during workshops to evaluate the different measures.

The effects of larger scale implementation of measures was then investigated using an integrated assessment model at EU scale. Results indicated that almost all measures had a positive effect on the soil threat, which was statistically significant in about half of the cases. Assessment of effects of measures on ES indicated highly positive effects, with only a few measures having negative effects on any of the ES considered over the time period of the study. Cost/benefit analyses showed that some measures are highly cost-effective in certain contexts, while for others this is not the case. However, societal benefits at broader scales than the measures should be considered as well, and would justify investment from authorities.

Policy analysis indicated that current policies have some positive effect on soil quality, but that by increasing the level of ambition of policies, much larger positive effects would be possible. All project results were disseminated to relevant audiences in appropriate formats, including RECARE website, films, leaflets, brochures, policy briefs, fact sheets, and social media.

**Number of delivered products** (in an appendix, please provide the titles and/or description of the products or a link to the products on public websites)

Academic articles	Reports	Articles in journals	Introductions/workshops
36	18	10	19

## Appendix: Names of the products or a link to the products on a public website

### Academic articles

#### *Peer reviewed journal publications (32)*

- Abrantes, João R.C.B., Sérgio A. Prats, J. Jacob Keizer, João L.M.P. de Lima. Effectiveness of the application of rice straw mulching strips in reducing runoff and soil loss: Laboratory soil flume experiments under simulated rainfall. *Soil & Tillage Research* 180 (2018) 238–249.  
<https://doi.org/10.1016/j.still.2018.03.015>
- Alexakis, D.D., Daliakopoulos, I.N., Panagea, I.S., Tsanis, I.K., 2018 “Assessing Soil Salinity with the use of WorldView-2 Multispectral Images in Timpaki, Crete, Greece” *Geocarto International*, pp.1-18, DOI: [10.1080/10106049.2016.1250826](https://doi.org/10.1080/10106049.2016.1250826)
- Ballabio, C., Panagos, P., Lugato, E., Huang, J. H., Orgiazzi, A., Jones, A., ... & Montanarella, L. (2018). Copper distribution in European topsoils: An assessment based on LUCAS soil survey. *The Science of the total environment*, 636, 282.  
<https://doi.org/10.1016/j.scitotenv.2018.04.268>
- Berglund, Ö. & Berglund, K. Jordan, S. Norberg, L. 2019. Carbon capture efficiency, yield, nutrient uptake and trafficability of different grass species on a cultivated peat soil. *Catena* Vol. 173: 175-182 <https://doi.org/10.1016/j.catena.2018.10.007>
- Brus, D.J. and van den Akker, J.J.H., 2017. How serious a problem is soil compaction in the Netherlands? A survey based on probability sampling. *SOIL*, 4, 37–45, 2018.  
<https://doi.org/10.5194/soil-4-37-2018>
- Camarotto, C., Dal Ferro, N., Piccoli, I., Polese, R., Furlan, L., Chiarini, F., & Morari, F. (2018). Conservation agriculture and cover crop practices to regulate water, carbon and nitrogen cycles in the low-lying Venetian plain. *Catena*, 167, 236-249. <https://doi.org/10.1016/j.catena.2018.05.006>
- Dal Ferro, N., Quinn, C., Morari, F., 2018, A Bayesian belief network framework to predict SOC dynamics of alternative management scenarios, *Soil and Tillage Research*, 179, pp. 114-124.  
<https://doi.org/10.1016/j.still.2018.01.002>
- Daliakopoulos, I.N., Apostolakis, A., Wagner, K., Deligianni, A., Koutskoudis, D., Stamatakis, A., Tsanis, I.K., “Benefits of *T. harzianum* in soil and yield conservation of tomato crops under saline irrigation”, *Catena*, 175, 144-153, April 2019, <https://doi.org/10.1016/j.catena.2018.12.009>
- De la Rosa J.M., Jiménez-Morillo N.T., González-Pérez J.A., Almendros G., Vieira D., Knicker H.E., Keizer J., 2019. Mulching-induced preservation of soil organic matter quality in a burnt eucalypt plantation in central Portugal. *Journal of Environmental Management* 231, 1135-1144  
<https://doi.org/10.1016/j.jenvman.2018.10.114>
- Giannakis E, A Bruggeman, Exploring the labour productivity of agricultural systems across European regions: A multilevel approach, *Land Use Policy*, Volume 77, 2018, Pages 94-106, ISSN 0264-8377, <https://doi.org/10.1016/j.landusepol.2018.05.037> .
- Hamidov A., Helming K., Bellocchi G., Bojar W., Dalgaard T., Ghaley B.B., Hoffmann C., Holman I., Holzkämper A., Krzeminska D., Kværnø S.H., Lehtonen H., Niedrist G., Øygarden L., Reidsma P., Roggero P.P., Rusu T., Santos C., Seddaiu G., Skarbøvik E., Ventrella D., Żarski J., Schönhart M. 2018. Impacts of climate change adaptation options on soil functions: A review of European case-studies. *Land Degrad Dev.* 2018;29:2378–2389. <https://doi.org/10.1002/ldr.3006>
- Hlavčová, K., Kohnová, S., Velísková, Y., Studvová, Z., Sočuvka, V., Ivan, P. 2018. Comparison of two concepts for assessment of sediment transport in small agricultural catchments, *J. Hydrol. Hydromech.*, 66, 4, 404-4015, <https://doi.org/10.2478/johh-2018-0032>
- Hlavčová, K., Danáčová, M., Kohnová, S., Szolgay, J., Valent, P., Výleta, R. 2019. Estimating the effectiveness of crop management on reducing flood risk and sediment transport on hilly agricultural land – A Myjava case study, Slovakia, *Catena* 172, 678-690,  
<https://doi.org/10.1016/j.catena.2018.09.027>
- Keizer J.J., Silva F.C., Vieira D.C.S., González-Pelayo O., Campos I., Vieira A.M.D., Valente S., Prats S.A., 2018. The effectiveness of two contrasting mulch application rates to reduce post-fire erosion in a

- Portuguese eucalypt plantation. *CATENA* 169, 21-30.  
<https://doi.org/10.1016/j.catena.2018.05.029>
- Krzeminska D., Kerkhof t., Skaalsveena K. and Stolte J. 2019. Effect of riparian vegetation on stream bank stability in small agricultural catchments. *Catena* 172(2019): 87-96
- Labat, M.M., Rattayová, V., Hlavčová, K. 2018. The impact of changes in land use on reductions in peak floods, *Acta Hydrologica Slovaca*, 19, 1, 69-77, ISSN 1335-6291.
- Lamandé, M., Greve, M.H., Schjøning, P., 2018. Risk assessment of soil compaction in Europe - Rubber tracks or wheels on machinery. *Catena* 167, 353-362.  
<https://doi.org/10.1016/j.catena.2018.05.015>
- Lamandé, M., Schjøning, P., Dal Ferro, N., Morari, F. Soil pore characteristics evaluated from gas measurements and CT-images: a conceptual study using artificial, natural and 3D-printed soil cores. *European Journal of Soil Science* (submitted).
- Lemann, T., Sprafke, T., Bachmann, F., Prasuhn, V., Schwilch, G. 2018. The effect of the Dyker on infiltration, soil erosion, and waterlogging on conventionally farmed potato fields in the Swiss Plateau. *Catena* 174 (2019), 130-141. <https://doi.org/10.1016/j.catena.2018.10.038>
- Madejón, P, MT Domínguez, E Madejón, F Cabrera, T Marañón, JM Murillo, Soil-plant relationships and contamination by trace elements: A review of twenty years of experimentation and monitoring after the Aznalcóllar (SW Spain) mine accident, *Science of The Total Environment*, Volume 625, 2018, Pages 50-63, ISSN 0048-9697.  
<https://doi.org/10.1016/j.scitotenv.2017.12.277> .
- Nosko, R., Výleta, R., Maliariková, M., Danáčová, M. 2018. Monitoring of effectiveness of technical measures in an erosion gully by progressive methodologies (in Slovak), *Acta Hydrologica Slovaca*, 19, 1, 84-92. ISSN 1335-6291.
- Nosko, R., Maliariková, M., Fencík, R., Szolgay, J. Use of spatial data collection methods for purposes of the measurement of the gully in locality Tura Luka. *Journal of the Cartographic Society of the Slovak Republic*, ISSN 1336-5274 (in press).
- Panagos, P., Ballabio, C., Lugato, E., Jones, A., Borrelli, P., Scarpa, S., Orgiazzi, A., Montanarella, L. 2018. Potential sources of anthropogenic copper inputs to European agricultural soils. *Sustainability*, 10 (7), art. no. 2380. <https://doi.org/10.3390/su10072380>
- Piccoli, I., Schjøning, P., Lamandé, M., Zanini, F., & Morari, F. (2018). Coupling gas transport measurements and X-ray tomography scans for multiscale analysis in silty soils. *Geoderma*.  
<https://doi.org/10.1016/j.geoderma.2018.09.029>
- Pituello, C., Dal Ferro, N., Francioso, O., Simonetti, G., Berti, A., Piccoli, I., ... & Morari, F. (2018). Effects of biochar on the dynamics of aggregate stability in clay and sandy loam soils. *European journal of soil science*, 69(5), 827-842. <https://doi.org/10.1111/ejss.12676>
- Prats S.A., Abrantes J.A., Coelho C.O.A., Keizer J.J., de Lima J.L.M.P., 2018. Comparing topsoil char, ash and stone cover effects on the post-fire hydrologic and erosive response under laboratory conditions. *Land Degradation and Development* 29 (7), 2102-2111 Link:  
<http://dx.doi.org/10.1002/ldr.2884>
- Pulido-Moncada, M., Munkholm, L.J., Schjøning, P. 2019. Wheel load, repeated wheeling, and traction effects on subsoil compaction. *Soil Till. Res.* 186: 300-309.  
<https://doi.org/10.1016/j.still.2018.11.005>
- Rončák, P., Maliariková, M., Nosko, R. 2018. Land use changes and their impact on the hydrological balance elements in the Bolnistskali River in Georgia. *Czech Journal of Civil Engineering*, 7 pp. (in press).
- Schwilch G., Lemann T., Berglund Ö., Camarotto C., Cerdà A., Daliakopoulos I.N., Kohnová S., Krzeminska D., Marañón t., Rietra R., Siebielec G., Thorsson J., Tibbett M., Valente S., van Delden H., van den Akker J., Verzandvoort S., Vrínceanu N.O., Zoumides C. and Hessel R. 2018. Assessing Impacts of Soil Management Measures on Ecosystem Services, *Sustainability* 2018, 10, 4416; doi:10.3390/su10124416
- Silva F.C., Vieira D.C.S., van der Spek E., Keizer J.J., 2019. Effect of moss crusts on mitigation of post-fire soil erosion. *Ecological Engineering* 128, 9–17 <https://doi.org/10.1016/j.ecoleng.2018.12.024>

- Thorsøe, M.H., Noe, E., Lamandé, M., Kjeldsen, C., Zandersen, M., Frelih-Larsen, A., Schjøning, P. Sustainable soil management - farmers' perspectives on subsoil compaction and the opportunities and barriers for intervention. *Land Use Policy* (in review).
- Vieira, D.C.S., D. Serpa, J.P.C. Nunes, S.A. Prats, R. Neves, J.J. Keizer. Predicting the effectiveness of different mulching techniques in reducing post-fire runoff and erosion at plot scale with the RUSLE, MMF and PESERA models. *Environmental Research* 165 (2018) 365–378.  
<https://doi.org/10.1016/j.envres.2018.04.029>

#### *Other scientific publications (4)*

- Bachmann, F., Lemann, T., Schwilch, G., Prasuhn, V. 2018. Der Dyker schützt vor Erosion und Staunässe. *Kartoffelbau: die Fachzeitschrift für Spezialisten*, 11/2018. ISSN: 0022-9156 Published bei DLG AgroFood Medien.
- Morari, F., Berti, A., Dal Ferro N, Picolli, I. (2019). Deep carbon sequestration in cropping systems. In Lal R., Francaviglia R., *Sustainable Agriculture Reviews* 29. Springer. In print.
- Ribeiro, C., Valente, S., Coelho, C., Fleskens, L., Keizer, J.J., 2018. When public funding available for the recovery of burnt areas, what was done? Collecting experiences from local promoters and implementers. *FLAMMA*. In press.
- Schjøning, P., Lamandé, M., Greve, M.H., Greve, M.B. 2018. Soil – the crucial prerequisite (in Danish). *Momentum* 2-2018, 42-46.

## **Reports**

#### *Deliverables (11)*

All public deliverables can be downloaded from: <https://soilcare-project.eu/downloads/soilcare-reports-and-deliverables>

- Schwilch G, T Lemann. 2018. Impact assessment on Ecosystem Services. D7.1. RECARE report 21, 70 pp
- Ballabio C, P. Panagos. 2018. Quality check of European Datasets contributing to RECARE project D10.2. RECARE report 22, 54 pp
- Bachmann, F., Schwilch, G., Lemann, T. and all CS partners 2018. Report about stakeholder valuation of ecosystem services. D4.2. RECARE report 24, 72 pp
- Keizer J.J., Hessel R. and case study partners 2018. Assessment of the effectiveness of implemented measures regarding combating soil degradation and to restore soil functions and ecosystem services. D6.2 RECARE report 25, 699 pp (with annexes)
- Keizer J.J., Mills J. and case study partners 2018. Report on Demonstration activities per Case Study site. D6.3. RECARE report 26, 157 pp
- Van Delden H, L Fleskens, B Irvine, M Kirkby, R Vanhout. 2018. The integrated PESERA, DESMICE, and METRONAMICA model. D8.1. RECARE report 27, 44 pp
- Fleskens L, M Gaaff, B Irvine and case study partners. 2018. Model assessments of the cost-effectiveness of prevention/ remediation/ restoration measures for all Case Study areas (draft). D7.2. RECARE report 28, 91 pp
- Jane Mills and Matt Reed 2018. RECARE Dissemination and Communication Hub which will host a suite of dissemination products. D11.1. RECARE report 30, 20 pp
- Frelih-Larsen, A., B. Görlach, S. Ittner, S. Naumann, M. Schock, L. Röschl 2018. Integrated impact assessment of European soil protection policies. D9.2. RECARE report 48, 93 pp
- Frelih-Larsen, A., B. Görlach, S. Ittner, S. Naumann, M.Schock, L.Röschl. 2018. Final policy recommendations. D9.3. RECARE report 49, 39 pp
- Mills J, A Frelih-Larsen, M Reed. 2018. RECARE Final Policy Conference. D11.3 RECARE report 53, 12 pp

#### *Other project reports (3)*

All public reports can be downloaded from: <https://soilcare-project.eu/downloads/soilcare-reports-and-deliverables>

Ingram J, J Mills 2018. RECARE: report on review of advisory support for managing soil threats. RECARE report 51, 105 pp

Anaya-Romero M, FJ Blanco Velázquez, J Mills and M Reed 2019. Exploitation and sustainability planning of results derived from RECARE - Task 11.4. RECARE report 55, 50 pp

Claringbould H. 2018. Gender Equality Report Reporting Period 4. RECARE report 50, 46 pp

#### *MSc and BSc theses (4)*

Makaroglou, G., Tsanis, I.K., 2018. Mitigation of soil salinity using biological soil amendments under greenhouse conditions, Technical University of Crete, Greece. Diploma of Engineering Thesis.

Nevras, N., Tsanis, I.K., 2018. Cost-benefit analysis of a rainwater harvesting investment for greenhouse irrigation. Technical University of Crete, Greece. Diploma of Engineering Thesis.

Stavrou, N., Tsanis, I.K., 2018. Effect of soil salinity on chlorophyll content of tomato plants with biological methods. Technical University of Crete, Greece. Diploma of Engineering Thesis.

Bokhorst K., 2018. Impact of lower mulching rates on post-fire erosion at the micro-catchment scale. MSc International Land and Water Management, Wageningen UR, The Netherlands.

#### **Articles in Journals (10)**

22-05-2018 – [RECARE – Results in Brief](#) Preventing and remediating soil degradation in Europe (On: CORDIS, 'Projects and Results').

07-12-2018: Jordpakning et stigende problem (Soil compaction is an increasing problem). Article in Journal 'Effektivt Landbrug', December 2018 p. 4.

25-04-2018 - Un gran laboratorio natural. (A great natural laboratory) El Correo de Andalucía, regional newspaper & online.

30-05-2018 – [Wo der Dyker locht, staut kein Wasser](#) (No water logging where the dyker digs). Schweizer Bauer (National farming newspaper).

01-06-2018 – [Der Dyker bremst die Erosion](#) (The Dyker stops erosion). BauernZeitung (National farming newspaper).

01-07-2018 – [Der Dyker bremst die Erosion aus](#) (The Dyker stops soil erosion). Die Grüne, No.7 (National farming magazine).

February 2019 – Come contrastare nei suoli la perdita di sostanza organica ("How to counter the loss of organic matter in the soils"). Publication in "L'Informatore Agrario" technical Italian national journal. ISSN 0020-0689.

15-03-2018 - 'Dig it!' Event, Museum of English Rural Life, Reading; As part of the 'ABC of soil' showcase - talked with members of the public about soil pH and soil biodiversity, and why both are important, Sarah Duddigan

Link: <https://merl.reading.ac.uk/event/dig-merl-late-british-science-week/>

29-05-2018 - 'Operation Earth' Event, Natural History Museum, London. As part of the 'ABC of soil' showcase, talked with visitors to the museum about soil pH and soil biodiversity, Sarah Duddigan

Link: <https://www.soilsecurity.org/from-bacteria-to-the-blue-whale/>

03-06-2018 - 'Big Band Big Lunch – Our Environment' Event. University of Reading (public event). As part of the 'ABC of soil' showcase, - talked with members of the public about soil pH and soil biodiversity, and why both are important. Sarah Duddigan

Link: <http://blogs.reading.ac.uk/the-forum/2018/06/04/when-soil-and-swing-collide-science-at-the-big-band-big-lunch/>.



## Introductions/workshops

### *Conference proceedings (9)*

- Dal Ferro, N., Camarotto, C., Piccoli, I., Berti, A., Mills, J., Morari, F., 2018. A participatory approach to combat the decline of soil organic matter in croplands. 3<sup>rd</sup> Global Soil Security “Soil Security and Planetary Health” Conference. Held 4-6 December, 2018 in Sydney, Australia.
- Lamandé, M., Greve, M.H., Schjønning, P., 2018. Risk assessment of soil compaction in Europe - Rubber tracks or wheels on machinery. 21<sup>st</sup> Conference of the International Soil Tillage Research Organization, 24-27 September 2018, Paris, France.
- Norberg, L., Berglund, Ö. & Berglund, K., & 2018. Impact of drainage and soil properties on carbon dioxide emissions from intact cores of cultivated peat soils. *Mires and Peat*, Volume 21 (2018), Article 03, 1–14, <http://www.mires-and-peat.net/>, ISSN 1819-754X, © 2018 International Mire Conservation Group and International Peatland Society, DOI: 10.19189/MaP.2017.OMB.284
- Németová, Z., Kohnová, S., Foldes, G. 2018. Evaluation the influence of different crop types on soil water erosion: the case study in the Myjava Hill Land, Slovakia. *WMCAUS 2018*, p. 125.
- Németová, Z., Honek, D., Kohnová, S. 2018. Impact of land use changes on soil water erosion estimated by physically-based erosion model. *Juniorstav 2018*, 20<sup>th</sup> Conference of Doctoral Study, Brno, CR, 25. 1. 2018, ECON Publishing, 743—748, ISBN 978-80-86433-69-1.
- Nosko, R., Maliariková, M., Jarabíková, M., Danáčová, M., Výleta, R. 2018. Determining of saturated hydraulic conductivity in the conditions of Slovakia. Influence of anthropogenic activities on water regime of lowland territory, proceedings of peer-reviewed contributions. *Zemplínska Šírava, SR*, 22. - 24. 5. 2018, IH SAS, 156-163, ISBN 978-80-89139-41-5.
- Pituello, C, N Dal Ferro, O Francioso, G Simonetti, A Berti , A Pisi, F Morari. 2018 Biochar addition has contrasting effects on aggregate stability dynamics of clay and sandy-loam soils . *Geophysical Research Abstracts Vol. 20, EGU2018-14823-1*.
- Ribeiro, C., Valente, S., Coelho, C., Fleskens, L., Keizer, J.J., 2018. Integração da gestão pós-fogo nas políticas e nos instrumentos de gestão do território e do setor florestal: a perspetiva dos agentes nacionais, regionais e locais. *Atas do VII CER – VII Congresso de Estudos Rurais*. 23 and 24 March, Escola Superior Agrária, Coimbra, Portugal, p. 68-77.
- Stavrou, N., Makaroglou, G., Daliakopoulos, I.N., and Tsanis, I.K., 2018. Chlorophyll Response to Salinity Stress in Tomato Plants, *Geophysical Research Abstracts*, Vol. 20, EGU2018-16370-1, Vienna, Austria, 9–13 April 2018

### *Oral presentations (5)*

- 26-28th February 2018 - Bonares Conference, ‘Soil as a Sustainable Resource,’ Berlin. Gudrun Schwilch gave a keynote presentation about the RECARE Ecosystem Services Framework for Soil titled "Sustainable Soil Management Through a Transdisciplinary Assessment and Validation of Ecosystem services". Jane Mills presented review work undertaken within RECARE on farm advisory systems for soil entitled "Are advisory services 'fit for purpose' to support sustainable soil management? A review of advisory capacity in Europe"
- 26th April 2018 - Research Conference on Soil Remediation and Ecosystem Services, 20 years after the Aznalcóllar mine accident. The RECARE video was screened during the meeting.
- Keizer J.J., Prats S., Abrantes J., Vieira A., Caetano A., Ré A., Oliveira B., Coelho C., Fernandes C., Ribeiro C., Vieira D., Silva F., Campos I., Puga J., Rocha J., Carreiras J.P., Nunes J.P., Saraiva M.J., Martins M., Malvar M., González-Pelayo O., Valente S., 2018. Post-fire contamination control measures. *CONNECTEUR Meeting “Connecting burnt hillslopes, streams and reservoirs: impacts of fires on water quality”* (Lisbon, 14-16/02/2018).
- Keizer J.J., Silva F.C., Vieira D.C.S.\*, Gonzalez-Pelayo O., Campos I.M.A.N., Vieira A., Prats S.A., 2018. The effectiveness of two contrasting mulch application rates to reduce post-fire erosion in a Portuguese eucalypt plantation. *Geophysical Research Abstracts Vol. 20, EGU2018-17868*
- Vieira D.\*, Serpa D., Nunes J.P.C., Prats S.A., Neves R., Keizer J.J., 2018. Predicting the effectiveness of different mulching techniques in reducing post-fire runoff and erosion with the RUSLE, MMF and

PESERA models. CONNECTEUR Meeting “Connecting burnt hillslopes, streams and reservoirs: impacts of fires on water quality” (Lisbon, 14-16/02/2018).

*Poster presentations (5)*

- Djuma, H., A. Bruggeman, C. Camera, C., S. Tlais, M. Eliades. 2018. Effects of soil erosion on soil organic carbon on a terraced vineyard in a mountainous Mediterranean environment. Geophysical Research Abstracts, Vol 20, EGU2018-953
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