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## ***Interactive comment on “CO<sub>2</sub> emission and structural characteristics of two calcareous soils amended with municipal solid waste and plant residue” by N. Yazdanpanah***

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I am appreciative very much for reviewers' comments about my discussion paper. I have received the comments of three reviewers and I thank them for their helpful contribution to improve the manuscript. For more convenience, the response to reviewers' comments was merged and was addressed in the text as follow:

Response to Referee #1 This is an interesting manuscript that provides important information from a region where such information is needed. The study appears to be well designed and well carried out. The techniques used are sound. The manuscript needs to be read and edited by a native English speaker. It should be possible to get a

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native English speaking colleague to do so, because the English is not bad, it just isn't at international publication quality and needs improvement in places. Response: The English language was improved throughout the manuscript.

Page 3152, Lines 24-25 – suggest adding Brevik et al. (2015) to the list of references. Response: It was added.

Page 3153, Line 2 – suggest adding Alexander et al. (2015) to the list of references. Response: It was added.

Page 3153, Line 7 – Turgut, 201 should be 2015. Response: It was corrected.

Page 3153, Line 24 – suggest adding Zornoza et al. (2015) in addition to Yasdanpanah et al. (2013). Response: It was added.

Page 3154, Line 9 – suggest adding Thomas et al. (2015) in addition to Ferreras et al. (2006). Response: It was added.

Page 3154, Lines 20-21 – suggest adding Cerdà et al. (2014) to the list of references. Response: It was added.

Page 3155, Lines 10 and 11 – should clarify here that the US system of Soil Taxonomy is being used. Also, which Keys to Soil Taxonomy was used to classify the soils? That Key should be referenced. Response: The Soil Taxonomy Key used in the study to classify the soils was clarified. Soil Survey Staff: Keys to Soil Taxonomy (11th Ed.). NRCS, USDA, USA, 2010.

Page 3155, Lines 14-18 – What crops were grown in these fields prior to the experiment? Response: Prior to the experiment, the dominant crops has been cultivated in these fields were wheat (*Triticum aestivum* L.) and corn (*Zea mays* L.). This was explained in the text.

What exactly is meant by “conventional management”? How was irrigation accomplished (flood, sprinkler, drip, etc.)? When the fields were rested in two years of fallow

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before the experiment, were weeds controlled? If so, were they controlled by tillage or by chemical treatment? This section on previous management should be expanded and better explained. Response: The fields were irrigated by flood irrigation. In two years of fallow before the experiment, weeds were controlled by tillage. This was explained in the text.

Page 3156, Lines 26-27 – No crops were planted and no fertilizes applied during the experiment, but were weeds/volunteer plants allowed to grow? If not, how were they controlled? Response: No, weeds/volunteer plants were controlled by tillage as explained in the text.

Page 3157, Lines 21-22 – How many samples from each treatment were analyzed for aggregate stability? Response: A portion of the soil samples was used to determine aggregate stability. For each treatment, three samples were analyzed for the aggregate stability.

Page 3158, Lines 4-5 – How many samples from each treatment were analyzed for porosity? Response: Three samples from each treatment were analyzed for porosity.

Page 3163, Line 7 – suggest adding Smith et al. (2015) in addition to Koranda et al. (2013). Response: It was added.

Tables 1, 2, and 3 – For each property reported in the tables, what was the sample size? n should be added to each table, and if it differed for different properties, the n as appropriate to each property should be reported. Standard deviations would also improve the reporting of data. Response: The sample size (n) for Tables 1 and 2 is 1. For Table 3, n=3, therefore the values of standard deviations were provided in Table 3.

Figures 1, 2, and 3 – It is not always clear which regression line goes with MSW versus AR, especially on Figures 2 and 3. The regression lines and data points should be done in colour, with one colour indicating MSW and another colour indicating AR. Response: Figures 1, 2, and 3 were prepared according to this comment (colour format).

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Response: These references were added to the list: Brevik, E. C., Cerdà, A., Mataix-Solera, J., Pereg, L., Quinton, J. N., Six, J., and Van Oost, K.: The interdisciplinary nature of soil, *SOIL*, 1, 117-129, doi:10.5194/soil-1-117-2015, 2015. Alexander, P., Paustian, K., Smith, P., and Moran, D.: The economics of soil C sequestration and agricultural emissions abatement, *SOIL*, 1, 331-339, doi:10.5194/soil-1-331-2015, 2015. Zornoza, R., Acosta, J. A., Bastida, F., Domínguez, S. G., Toledo, D. M., and Faz, A.: Identification of sensitive indicators to assess the interrelationship between soil quality, management practices and human health, *SOIL*, 1, 173-185, doi:10.5194/soil-1-173-2015, 2015. Thomas, C., Sexstone, A., and Skousen, J.: Soil biochemical properties in brown and gray mine soils with and without hydroseeding, *SOIL*, 1, 621-629, doi:10.5194/soil-1-621-2015, 2015. Cerdà, A., Giménez Morera, A., García Orenes, F., Morugán, A., González Pelayo, Ó., Pereira, P., Novara, A., and Brevik, E. C.: The impact of abandonment of traditional flood irrigated citrus orchards on soil infiltration and organic matter. In: Arnáez, J., González-Sampériz, P., Lasanta, T. and Valero-Garcés, B.L., (Eds). *Geoecología, Cambio Ambiental y Paisaje: Homenaje al Profesor José María García Ruiz*. Instituto Pirenaico de Ecología, Zaragoza. p. 267-276, 2014. Smith, P., Cotrufo, M. F., Rumpel, C., Paustian, K., Kuikman, P. J., Elliott, J. A., McDowell, R., Griffiths, R. I., Asakawa, S., Bustamante, M., House, J. I., Sobocká, J., Harper, R., Pan, G., West, P. C., Gerber, J. S., Clark, J. M., Adhya, T., Scholes R. J., and Scholes, M. C.: Biogeochemical cycles and biodiversity as key drivers of ecosystem services provided by soils, *SOIL*, 1, 665-685, doi:10.5194/soil-1-665-2015. Soil Survey Staff: *Keys to Soil Taxonomy* (11th Ed.). NRCS, USDA, USA, 2010.

Response to Referee #2 This manuscript (CO<sub>2</sub> emission and structural characteristics of two calcareous soils amended with municipal solid waste and plant residue) is suitable with the scope of the journal (*Solid Earth*). The study addresses an interesting issue related to the influence of different organic amendments on some soil properties particularly microbial respiration and structural characteristics and the relationship between the selected soil properties. The manuscript is well written and flows well. The concept is clear to understand. The introduction gives a good general overview to the

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topic “organic amendments”. The methodology of this paper looks solid. The results appear reasonable and match well with the stated objectives. The things that need editing are minor.

P3152 L19, P3161 L12, P3164 L13, L27, P3165 L10, L15, L16, L18, P3166 L4, L13, L15, L19: replace 'macro pores' with 'macro pore' Response: They were replaced.

P3152 L14: remove 'order' Response: It was removed.

P3152 L17: replace 'macro to micro pores' with 'macroporosity to microporosity' Response: It was replaced.

P3155 L12: replace 'A long-term mean' with 'Long-term mean' Response: It was replaced.

P3155 L16: replace 'having' with 'that has' Response: It was replaced.

P3157 L2: replace 'the four subsamples' with 'four subsamples' Response: It was replaced.

P3157 L5: replace 'crushed' with 'were crushed' Response: It was replaced.

P3157 L21: replace 'A part of soil samples was provided for measurement of' with 'A portion of the soil samples were used to determine' Response: It was replaced.

P3157 L25: replace 'was dried in oven' with 'was oven dried' Response: It was replaced.

P3158 L8: replace 'Macroporosity' with 'The macroporosity' Response: It was replaced.

P3158 L16: replace 'at 95 %' with 'at the 95%' Response: It was replaced.

P3158 L23, P3160 L1, P3161 L23, P3162 L28, P3163 L23, P3166 L12: replace 'caused to' with 'caused' Response: They were replaced.

P3160 L3: remove 'order' Response: It was replaced.

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P3160 L3-L5: the sentence is not clear. Response: It was rewritten.

P3160 L11: replace 'than those found' with 'than those were found' Response: It was replaced.

P3162 L4: replace 'found' with 'was found' Response: It was modified.

P3163 L24: remove 'order' Response: It was removed.

P3164 L23: replace 'in contrary' with 'to the contrary' Response: It was replaced.

P3165 L14-L15: replace 'in the macro pores than in the micro pores fraction' with 'in the macroporosity than in the microporosity' Response: It was replaced.

P3166 L9: replace 'found' with 'was found' Response: It was revised.

P3166 L16: replace 'micro pores' with 'micro pore fraction' Response: It was replaced.

Response to Referee #3 Does the paper address relevant scientific questions within the scope of SE? Yes. Does the paper present novel concepts, ideas, tools, or data? No. Are substantial conclusions reached? Yes. Are the scientific methods and assumptions valid and clearly outlined? Yes. Are the results sufficient to support the interpretations and conclusions? Yes. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Yes. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? No clear in the present format. They have to highlight what is novel/new from their contribution compared to previous researchers. Response: Some new contributions compared to previous studies were highlight in the text.

Does the title clearly reflect the contents of the paper? Yes. Does the abstract provide a concise and complete summary? Yes. Is the overall presentation well structured and clear? Yes. Is the language fluent and precise? It still needs some improvement in the English style and grammar. Response: The English style and grammar was improved

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through the manuscript.

Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? No applicable. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? No. Are the number and quality of references appropriate? Yes. Is the amount and quality of supplementary material appropriate? No applicable.

Comments on format 122. ..were under fallow Response: It was changed.

124-125: Where are the results for the particle size distribution? Response: Particle size distribution as primary (soil texture) and secondary (i.e. MWD) is presented in Table 1.

125-129: Move to the results section Response: It was moved to results.

132-133: Please insert a comma before “as well as” and “were”. It will show as: “In this study, two organic inputs from different sources, as well as C:N ratios including urban MSW compost and alfalfa residue (AR), were applied.” Response: Commas were added to this sentence.

141. It says: “As is clear” it should say ““As it is observed” Response: It was changed.

187-188: It says: “..since it do not allow..” it should say “since it does not allow..” Response: It was changed.

209: It says: “..caused to significant : : :” it should say “caused significant..” Response: It was changed.

230-233. Please, add commas to this paragraph “The values of microbial respiration for 10 Mg ha<sup>-1</sup> and 30 Mg ha<sup>-1</sup> application rates of MSW were respectively 2 and 3 times higher in the loamy sand soil and 2.1 and 3.3 times higher in the clay loam soil than those values obtained for unamended soils.” Response: Commas were added to this text.

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- 239: It says: “..caused to : : :”. it should say “caused ..” Response: It was changed.
249. It says: “Following 10..” it should say “ For the 10: : : Response: It was changed.
- 264: It says: “Depends on the type..” it should say “caused ..” Depending on the type” Response: It was changed.
- 281: It says: “in both the soils..” it should say “in both soils ..” Response: It was changed.
- 288: It says: “..caused to : : :”. it should say “caused ..”. Please check this mistake throughout the text. Response: It was changed throughout the text.
- 295: It says: “found to increase the SOC concentration..” it should say “increased the SOC concentration..” Response: It was changed.
- 298: It says: “.. It is apparent from the result..” it should say “..” It is seen: : :” Response: It was changed.
- 300-305. Please rewrite the following text. “Regarding the differences between chemical composition of amendments, the organic carbon content of AR (468 g kg-1) was more than the organic carbon of MSW (394 g kg-1), meanwhile the C:N ratio of AR-treated soils was more than the C:N ratio of MSW-treated soils (Table 2). In other words, depends on the chemical composition and C:N ratio of amendments, different amounts of organic carbon had been finally added to the soils.”. it is unclear. Response: It was rewritten.
- 306: It says: “.. applications rate of..” it should say “..application rate of” Response: It was changed.
320. It says: “.. attributed to this fact” it should say “..attributed to the fact : : :” Response: It was changed.
377. It says: “.. : : :” amendments used ” it should say “.. : : :” amendments: : :” Response: It was changed.

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389. It says: “This finding has been approved by Jarvis (2007) who characterized the macro pores by high temporal variability.” Do you mean that Jarvis has observed the same results? Response: Jarvis (2007) reported that macro pore fraction had higher temporal variability than micro pore fraction. This statement was improved in the manuscript.

401. It says: “.. can be contribute” it should say “..can contribute: : :” Response: It was changed.

412. It says: “.. . It says: “The use of MSW and AR found to improve” it should say “The use of MSW and AR improved”. Response: It was changed.

421-422. It says: “the soil porosity especially macro pores fraction influences on the soil microbial respiration and carbon mineralization.” It should say “the soil porosity, especially macro pores fraction, influenced the soil microbial respiration and carbon mineralization. Response: It was changed.

Best Regards

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/7/C1715/2016/sed-7-C1715-2016-supplement.pdf>

Interactive comment on Solid Earth Discuss., 7, 3151, 2015.

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