

Review Report: Ideas and perspectives: truffles not radioactive

General comments

The objective of this study is remarkable and original because there are no previous works to assess radioactivity of truffle sporocarps, which is a mushroom of high socio-economic importance in Europe. The principal aim has a scientific interest and for general readers. Moreover, the significance of the study content is high due to affects forest management and trade of a great non-timber product with high social value. The adequate English language and style text eases a clear exposition of ideas and the text briefness evidences high-quality reading. Overall, it is as already noted a good scientific work. However, it would be good to clarify some of the comments made here with the sole purpose of trying to participate in active discussion and improve the good work done by the authors. Therefore, the review could be classified as minor changes for acceptance.

Specific comments

Comment 1.

Generally ^{137}Cs is well fixed in soil, while other radioisotopes are more mobile as ^{90}Sr or ^{131}I , hence ^{137}Cs is accumulated hardly. Therefore, it is right the observation made by the authors (line 54) about the possibility that soil with high content in carbonates, characteristic of truffle ecology, radioisotope ^{137}Cs is retained more or less innocuous. Besides authors complete this justification attending to a fungus anatomy features as depth mushroom mycelium or the lack of specific ^{137}Cs pigments. From my point of view, I think it would be appropriate to know what the structure mycelium of the truffle is and how it could affect to results or cite some those fungal species with such pigments to complement that justification.

Comment 2.

Other reasons for the lack of radioactivity of ^{137}Cs in truffles carpophores collected, which the authors could consider, could be as follow:

2.1 The sampling years/collection carpophores: After thirty years from the biggest radiation isotope ^{137}Cs outflow, has fulfilled the disintegration period for this isotope, thus, does not seem strange low concentrations in the field, which could void the hypothesis that the truffle sporocarp does not capture cesium radioisotopes.

2.2. Truffle sporocarp treatment. Authors comment in line 45 that the sporocarps were cleaned but not clearly explained in what consisted that cleaning process which could have affected the amounts of ^{137}Cs captured by the fruitbody. Clean water could be removed the radiation from the surface, due to ^{137}Cs isotope is a good soluble in water. Moreover, the absorption of ^{137}Cs could form biological part of sporocarp given the high competence of ^{137}Cs and potassium, abundant compound in mushrooms cells. If after sporocarp harvest and before laboratory analysis spent much time and due to

short life of biological ^{137}Cs (50 days approx.), Could it have affected the results of the work?

2.3. The study area or place where sporocarps were collected was very wide, but it seems that was very low in number (two sporocarp) within the theoretical area of greatest radioactivity (Figure 1a). I appreciate the hard work of harvesting the hypogeous mushrooms, but I think it is necessary to discuss the extrapolation of these results obtained in the area of high radioactivity given the low number of specimens collected there. Is it possible that there are ecological conditions of soil and truffle host within the high radioactivity area? If so, I think we should take the results with a little more caution.

Comment 3.

Moreover, following the abovementioned, I think it would be necessary that authors take the results with caution and avoid finalist conclusions in which it is ensured that there is no risk of radioisotope ^{137}Cs in truffles throughout Europe and extend it to consumers worldwide (lines 48.49). From my point of view, I think it is best focus to the study area, note that countries or areas with the highest radioactivity pollution have not been sampled, such as Austria, Slovenia and southern Germany (Figure 1a).

Comment 4.

Authors refer to mushroom as the main path of radioisotope ^{137}Cs in the human diet (line 22 and 66), which is opposed by some authors who are cited in the text and who found to livestock and bovine as the main source of income to the human food chain (lines 30-40).

Technical corrections

The quote in line 59: Stobbe et al., 2014, does not appear in the reference section.

Finally, I hope the inclusion and/or discussion of any of the points of view abovementioned within the text could be useful to authors and to understanding the real phenomenon of ^{137}Cs radioisotopes accumulated by truffle sporocarps.