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Interactive comment on "Forest conversion to poplar plantation in a Lombardy floodplain (Italy): effects on soil organic carbon stock" *by* C. Ferré et al.

Anonymous Referee #2

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The study is (one of) the first showing SOC stock changes after converting native (old growth) forest to short rotation coppice (SRC) in Europe. It is therefore important and timely, although only a case-study. It nicely highlights one of the major problems we have working with SOC, especially in paired plot studies: spatial heterogeneity. Overall, they took enough samples to observe changes in different texture clusters, which is an obvious strength of the study. However, I have four major concerns (general comments), which should be solved:

1. The abundance of big stones (exceeding the volume of the core cylinder). Nothing is written of how they were estimated, or if they were present at all, while they are a typical problem in floodplains close to steep slopes. They might however be quite

important for SOC stocks, but were not part of the SOC stock calculation a far as I understood. Authors should find a clear statement here, even two profile pictures (NF vs. PP) could help.

2. The influence of texture as shown in Fig. 3 is discussed weakly. I would like to see some more process related discussion here.

3. In the introduction the authors mention UNFCCC and reporting. But instead of pointing out that short rotation coppices are not yet part of the good practice guidance for reporting (a major justification for this study in my view), they claim that "few data are avalaible" on SOC stocks and their changes (after land use change, or whatever is meant here). This, however, is a very weak formulation and in my view not justified. I think there is a huge amount of data available, dozens of reviews have been published. Instead, authors should highlight that the specific land use change (forest to SRC) is poorly quantified. In the discussion, this should come back with a conclusion like "SRC could be treated as cropland. . .The whole section 4.3 needs to improve, and should stand out as a core section of the manuscript (with sentences in the abstract and conclusions). Right now, the last sentences in the abstract are very poor- "ploughing destroys the stratification of a forest soil", this is not a very surprising observation and does not match the scientific level of the journal. No need to mention that in the abstract!

4. I miss some more recent literature on SOC stocks under SRC (as compared e.g. to croplands), which would lead, when discussed together with the results observed here, to such conclusions as suggested in point 3. It is only a case-study, but I feel that it is a high-quality one and it deserves to be discussed in the larger picture.

Specific comments:

You mix up SOC stock and content very often. Please use only one expression, or think twice what you mean.

BGD

11, C3346–C3348, 2014

9603, l. 5: delete “by man”. Who else should “use land”?

9603, l. 25: delete “thick”, use “dense”

9610, l. 3: change “humus layer” into “litter layer”.

9612: Section title: “methodology comparison”

9612, l.21: change “amount” into “stocks”

9614, l. 2: “Poeplau”

9616: Please rename section title, suggestion: “Further changes in soil properties due to land use change”

Interactive comment on Biogeosciences Discuss., 11, 9601, 2014.