Review of PeerJ "Impact of crop residue management on crop production and soil fertility after seven years of crop rotation in temperate climate and loamys soil"

Specific comments:

Title: the title is not everywhere the same. On page 4 of the PDF, there are spelling mistakes "rotatin" and "intemperate". On page 5 of the PDF, it is written "in temperate climate, loamy soils." while on page 4 it is written "intemperate climate and loamy soil". I would write "soil" (singular) and "and" between climate and loamy.

Abstract

Line 22: It is not clear, what "system" you mean, i.e. what system boundaries you refer to. Please be more precise.

Line 23-24: What kind of "conclusions" do you refer to? Conclusions about what? About sustainability with regards to soil organic matter build up or degradation? Soil fertility? Food production, yields? Food quality (protein, micronutrients…)? Greenhouse gas emissions?...

Line 30: You talk about six crops, but you list only three crops. Why?

Line 32: What do you mean with "limited effect"? No effect, or small, insignificant, unexpected effects?

Line 45: In my opinion, this is not part of the abstract, but rather an outlook, which should come at the end of the manuscript. The representation by ",…" is not very scientific. The last sentence of the abstract should be a conclusion with the main point (take home message) and impact of your research (e.g. implications or importance for the research field) and should be based on your results.

Introduction

Definitions: Please define the most important terms such as (with references): residue, conventional tillage, reduced tillage

Line 60: This sentence does not say much with "is often discussed". Did you want to say that the impact of straw incorporation is controversial or that there are conflicting results?

Line 74: Here you are talking about residue effects on crop yields and not "whatsoever" effects. Please be precise.

Line 77: I would replace "say something about" with something like "assess".

Line 80: I don't find Blanco-Canqui and Lal (2007) in your references.

Line 82: Please specify what you mean by "nitrogen and phosphorus uptake". Uptake by crops? By soil microorganisms? Total uptake or concentrations of nutrients? This is important since crop nutrient uptake is heavily related to the nutritional status of the plant, to soil nutrient availability, plant nutrient homeostasis etc.

Materials and methods

Line 99: Does this amount of precipitation and the annual average temperature represent values over the experimental years or were they averaged over 30 years?

Line 113: It would be good to know the cultivar and the seed supplier (I could not find out whether all this information is given in Appendix C). Secondly, the crop rotation reported here representative for the agricultural practise in the region of the experiment? Please motivate.

Line 139: “Kjeldahl”, not “Kjedahl”. What instrument was used for analysis of N?

Line 143: What instrument was used for the colourimetric analysis?

Line 145: “around April and October”: when exactly was the soil sampled?

Line 147 and 150 and 156: What were the instruments used for the organic carbon analysis, for the colourimetry and for the nitrate?

Line 153: At what phenological stages of the crops? Please specify.

Results

Germination rate line 182 ff.: The presentation of the results in table 3 and 4 is confusing. One table should be sufficient. I suggest first testing the factors tillage type and residue fate by a 2-way ANOVA and then test whether differences between treatment means are significant by an appropriate post hoc test (such as Tukey HSD).

Lines 192-199: This part is a bit unclear. What do you mean with “negatively impacted crop rotations” and “was favourable to the crop development”? Do you just refer to the biomass development? Or do you refer to the development stages (faster or more slowly development)? And if yes, is faster development better than slow development? Please clarify this part.

Line 200 ff.: Again, as for the germination rate (see comment above), I would report the 2-way ANOVA result and report treatment means in table 5 (as in table 4).

Chapters 3.1.2 and 3.1.3: Here you are mixing the results and split it in two chapters. It would be good to clearly separate crop development as described by the development stages (BBCH scale), biomass/yield development (t/ha), and the grain quality.

Line 214-216: Please specify what you mean with grain quality and what effects you are talking about. I suggest using the term concentration if you refer to values in [mg/kg] in grains. Content is often used when it is referred to total uptake by crops [g].

Chapter 3.1.4: You should give the p-values in addition to the R2. Especially where you report effects (faba bean and winter wheat). Also, this part should come together with the crop yield part and not as a separate sub-chapter.

Line 225: From the text it is not clear what you are talking about. Whether it is concentrations of N, P and K in the soil, or concentrations in the residues, or total nutrient content returned to the soil. Please clarify.

Line 235: TOC has to be presented in [g/kg] everywhere and not in [g/100g] and not in [%].

Line 251-254: This belongs to the discussion part.

Line 286 – 288: Based on what finding?

Line 305: Do you refer to figure 4? There are not only significant differences for winter wheat 2010-11, but also stars for different years. “Increase in nitrogen grain stock” due to what reason? This is confusing.

Line 313-314: It is completely unclear what you mean. You did not introduce these results in the results section.

Line 334-335: Please add reference. Is it still Damon et al. who said this?

Line 342: Consistent with what? Do you mean that there was a residue effect on soil K and not on soil P because the K concentrations of the residues were higher than the P concentrations?

Line 351: This is completely off-topic. This is not a conclusion of your results.

Line 354-356: This is no conclusion of your results. You even write that “this is known”.

Table 2: How was the germination rate determined (methods)? The entry “difference of residues…” is not clear to me, please write more clearly.

Table 3: Significance letters for winter wheat 2013-14 are missing, but they are written in table 4? Is this a mistake?

Tables 3, 5, 6: The results should not be split into individual means for the two levels of each individual factor (residue treatment and tillage), but as means of treatment combinations (as in table 4). Then, the results of a 2-way ANOVA could be reported in the appendix, which would show whether there was a significant effect of the residue treatment or the tillage treatment.

Figure 4: Are the values given kg NO3/ha or kg NO3-N/ha? Please specify. What assumptions did you take for the calculation of NO3 in kg/ha (soil density)? Why didn’t you report NO3-N concentrations in [mg/kg] soil.

Figures 3, 4, Appendix D: What do the bars represent (standard deviation, error?)? Please indicate in the figure caption.

Appendix D: Potassium and Phosphorus concentrations please report in [g/kg] or [mg/kg]. “Phosphorus” not “Phosphore”.