Reviewer 1

This is an interesting study on variety mixtures of wheat under resource limited conditions conducted in greenhouse. The manuscript is well structured and the idea is interesting and relevant in addressing underlying mechanisms of variety mixtures to reduce intra-specific competition. While previous studies have widely reported the contributions of aboveground functional traits (i.e., plant height, specific leaf area, leaf C/N ratio) to inter- and intra-specific interactions, little is known about how root interactions might increase productivity, especially among different cultivars or genotypes. This study explores the effects of wheat variety mixtures on reducing intra-specific belowground competition and finds that this reduction is closely related to root area.  
Generally, the study is well presented, and I enjoyed reading it. However, I also have several questions and believe that the manuscript should be revised thoroughly before being published. I have listed my major points in detail below and hope that these may help to clarify a few things in the revision.  
Major points  
1) Your abstract is well and clearly written, but you should state more clearly the research gap and the novelty of your work. For research gap, you might state more clearly about why it would be useful to fill it, how you intend to do so and what the novelty of your research is (either the method and/or the results).   
Lines 39-40: The manuscript mentions that the strength of competitive ability is related to root area, but it does not specifically explain how the root system influences plant competitive ability. The most significant and novelty results are not adequately highlighted in Abstract.  
2) The Introduction is well-written and logically clear. However, there is insufficient description (review) of how the root system can reduce competition and lower TOCs (Tragedy of the Commons). The current state of research in this area, as conducted by previous studies, is also not clearly stated.  
3) The manuscript does not calculate selection and complementarity effects, although these are discussed in the abstract, hypothesis in Introduction section, and Discussion sections of the paper. I recommend that the authors calculate the diversity effects, including selection and complementarity effects. Even if it is challenging to measure belowground biomass, I believe that aboveground biomass data can be used for these calculations.  
4) Line 224: I do not fully understand here and the rest of the results analysis sections. Since it was mentioned earlier in the “phenotype” description (Line 186-188) that the roots in mixtures cannot be distinguished, so I am confused how is the root RY calculated here? There seems to be a contradiction between the earlier and later descriptions.  
5) There is no Conclusion section in this manuscript. That is, there is no summary provided after the Discussion section. I suggest adding this section. Please clearly state the novel findings of your work, whether they are methodological or results-based, as requested in the instructions for authors. Additionally, it would be beneficial to include some comments on how these findings will inform future agroecological management strategies.