RESPONSE TO REVIEWER 2 (ANONYMOUS)

The present manuscript by Pfeiffer et al. is a comprehensive review of key factors involved in the sustainability and productivity of African smallholder farms. I found the analysis to be insightful and appropriate and only have minor comments.

Thank you for your positive evaluation of your work.

The abstract would benefit from more numbers to make it more quantitative to help describe exactly what was found.

We will add some numbers for the key results.

There are minor usage issues throughout, the first is on line 34 (p. 2): "Livestock" is plural so the correct usage is 'Livestock provide..' (see also line 35; a quick review will correct any minor issues.) More: space after the period on L. 70, etc. (L. 89: "and cowpea" to distinguish between tubers after the comma.)

Thank you for these editorial hints, we will incorporate them in the final manuscript.

I found the last paragraph of the Introduction to be a bit confusing: listing the questions first and then the approach used would help lead into the specific study.

We will restructure the paragraph to improve the flow of the logic.

section 2.2: some of the crops are listed twice in the paragraphs beginning lines 99 and 105.

We have checked this and found it is not the case; there is also no duplication in table 1.

Please describe t/ha to distinguish between metric tons (or tonnes) and imperial tons. Obviously the former is more appropriate and I assume is used here, but the latter is in common usage in many places.

It is metric tons. We will specify this explicitly when introducing the unit for the first time, or alternatively exchange the unit tons with Mg.

LU is not defined at first use.

Livestock unit. Sorry for the omission, we will add the definition.
Results: I feel that there are probably too many significant digits for a modeling study throughout. For example 53 +/- 23 is probably more correct than 53.2 +/- 22.9, etc. The results were comprehensive but somewhat long, and an eye toward brevity would improve the Results section.

We will check the number of significant digits throughout the manuscript, and see if/where we can shorten the results section.

I guess that my biggest question regarding the outcomes is the suggestion for irrigation feasibility? This usually involves considerable expense and can have other deleterious consequences. A brief analysis of the likelihood or sustainability of irrigation would strengthen the conclusions.

In our project area, there have been recent investigations (e.g. Lam et al., in review) that have shown that in some of the water catchments in future, there will indeed be a decline in available surface water and groundwater resources. In our scenarios, however, we have been referring to very restricted “deficit irrigation” which can be drawn from rainwater-harvesting, and drip irrigation from available boreholes and surface water without exhausting water resources as reported in Magombeyi et al 2018; Parry et al 2020).

Magombeyi M S, Taigbenu A E and Barron J 2018 Effectiveness of agricultural water management technologies on rainfed cereals, crop yield and runoff in a semi-arid catchment: a meta-analysis J. Agric. Sustain. 16 418–41