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Interactive comment on "Biochar increases plant available water in a sandy soil under an aerobic rice cropping system" *by* M. T. de Melo Carvalho et al.

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Dear F. Pan,

Thanks for reading our manuscript and for your comments. We agree that there is not always consensus on the exact definitions regarding soil moisture states. For that reason we have clearly described the definitions we have used in this study. According to the Van Genuchten model (Van Genuchten 1980), residual soil moisture is theoretically the soil moisture content at a matric potential $\leq$ -1500 kPa as described in Eq. 1 (page 894). In our model (Eq. 2, page 895), we set residual soil moisture or teta R as the measured soil moisture content at -1500 kPa, and the saturated soil moisture

or teta S as the measured soil moisture content at 0 kPa as input parameters (page 895, lines 20-22). The plant available water content is usually calculated as the available water between -6 or -10 kPa (field capacity) and -1500 kPa (wilting point). But there are variations regarding the ideal hydric interval, depending on the method of the study, including the crop, soil type and experimental conditions (da Silva et al. 2009). We calculated the plant available water (PAW) content as the difference in soil moisture content between -6 kPa and -1500 KPa (page 896, lines 6-8), similarly to Abel et al. (2013) in a 79.9% sandy loam soil and Ibrahim et al. (2013) in a 62% sandy loam soil under field conditions as discussed in page 903 (lines 10-12). We also calculated the available water for rice (RAW) as the soil moisture content between -6 and -100 kPa (page 896, lines 5-6), given that water stress for rice starts at a matric potential as low as -12.5 kPa in clay soils (Stone et al. 1986). For those who are interested in any other measure: with the help of our model (Eq. 2, page 895) one can easily calculate the available soil moisture content between any matric potential.

Kind regards,

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