"One of the soil-water parameters that is most useful for elucidating soil hydraulic characteristics is water holding capacity (WHC). Water holding capacity is the total measure of a soil’s water retention at field capacity (FC), while field capacity is a characteristic that describes the matric potential and water content at which gravity-driven drainage of a previously saturated soil has become negligible. The period between wetting and negligible drainage under field conditions is usually 48-72 hours (SSSA, 2008). Matric pressure values at FC generally range from -50 to -330 cmH2O (Minasny & McBratney, 2018). Although -330 cmH2O is a widely used generalization, FC can vary substantially across soils as it is dependent on pore structure and water table depth.

Water table depth determines the energy status associated with capillary held water; therefore, deeper water tables are associated with a more negative average matric potential and as increasingly smaller capillaries are associated with capillary flow across greater distances. Pore structure also has significant influence on FC as soil-water held in larger macropores is most readily drained (Papendick & Campbell, 1981). After initial drainage associated with macropores has become negligible, residual water does remain; however, it is held against gravity in smaller pores and pore necks by matric forces. As water potential becomes more negative, water is no longer held in pores but mainly as adsorbed films on particle surfaces. At matric pressures less than ≈ -1000 cmH2O water is unable to physically drain due to the matric forces acting on soil-water menisci; therefore, soil-water at pressures ≤ -1000 cmH2O is hygroscopic. As negligible drainage is inherently arbitrary, an exact matric potential associated with FC for a given soil at a given depth is concomitantly arbitrary; therefore, an unambiguous range of matric potentials associated with FC must be defined for any given study. Our study defines FC as the soil water content associated with a -50 to -100 cmH2O matric pressure averaged across the 0-5cm soil layer; which is the soil layer that most readily exhibits crop management influences on soil properties (Moore et al 2014). Research by Bonfante et al. (2020) supports the validity of FC that are within our chosen matric potential range. "