

Table S1. Standard scoring functions and indicators parameters in the study area (SSF Equations were adopted from Zeraatpisheh et al. [31]).

Indicator	FT	L	U	O	SSF Equation	
pH	OR	7.60	7.80	7	S_L	
EC (dS m ⁻¹)	OR	1.09	1.40	0.20-2.00	$= \begin{cases} 1 & x \leq L \\ 1 - 0.9 \frac{x-L}{U-L} & L < x < U \\ 0.1 & x \geq U \end{cases}$	$\begin{matrix} & & \\ & & \\ & & \end{matrix} \begin{matrix} \\ \\ \end{matrix} \begin{matrix} \\ \\ \end{matrix}$
ρb (kg m ⁻³)	LB	1.04	1.80	-		
CCE (%)	LB	17.50	35.50	-		
SOM (%)	MB	1.09	2.35	-	S_L	
TN (%)	MB	0.09	0.30	-	$= \begin{cases} 0.1 & x \leq L \\ 0.9 \frac{x-L}{U-L} + 0.1 & L < x < U \\ 1 & x \geq U \end{cases}$	$\begin{matrix} & & \\ & & \\ & & \end{matrix} \begin{matrix} \\ \\ \end{matrix} \begin{matrix} \\ \\ \end{matrix}$
P _{ava} (mg kg ⁻¹)	MB	30.61	48.91	-		
K _{ava} (mg kg ⁻¹)	MB	294.66	667.59	-		

EC: electrical conductivity, ρb: bulk density, CCE: calcium carbonate equivalent, SOM: soil organic matter, TN: total nitrogen, P_{ava}: available phosphorous, K_{ava}: available potassium. FT: function type; LB: the lower, the better; MB: the more, the better; OR: optimal range; SSF: standard scoring function; x: indicator value, S_L: linear score of indicator; L: lower threshold values; U: upper threshold values.