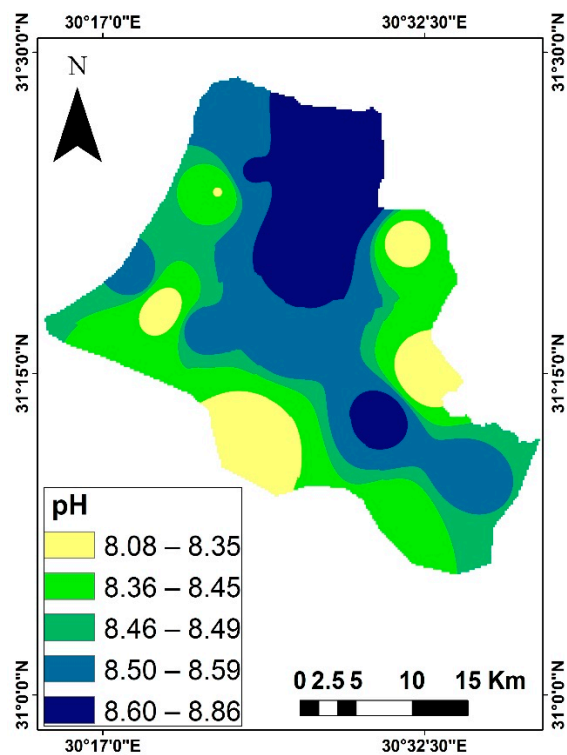
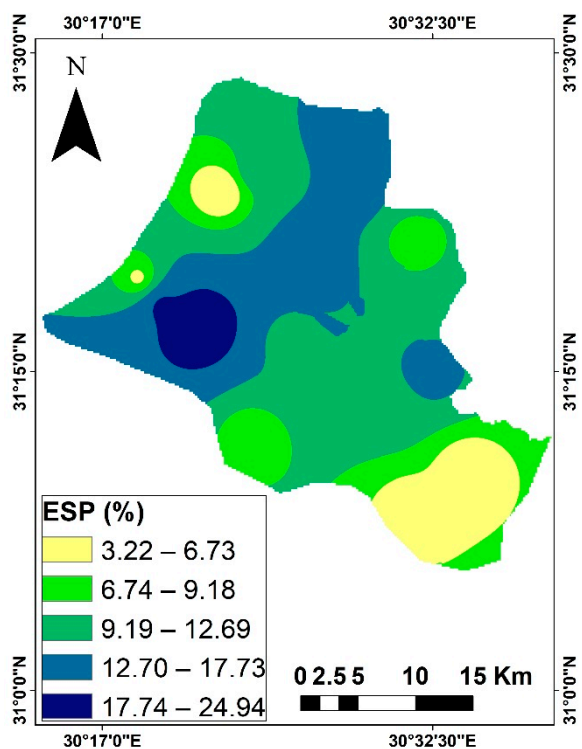


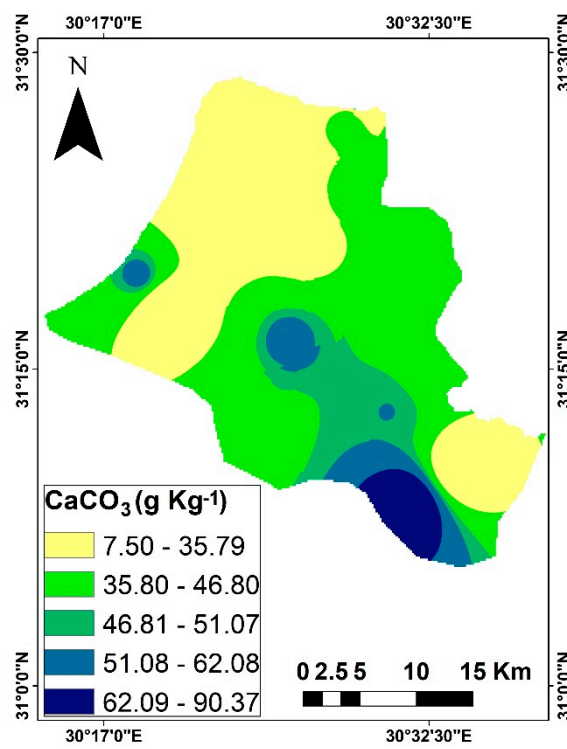
(a)



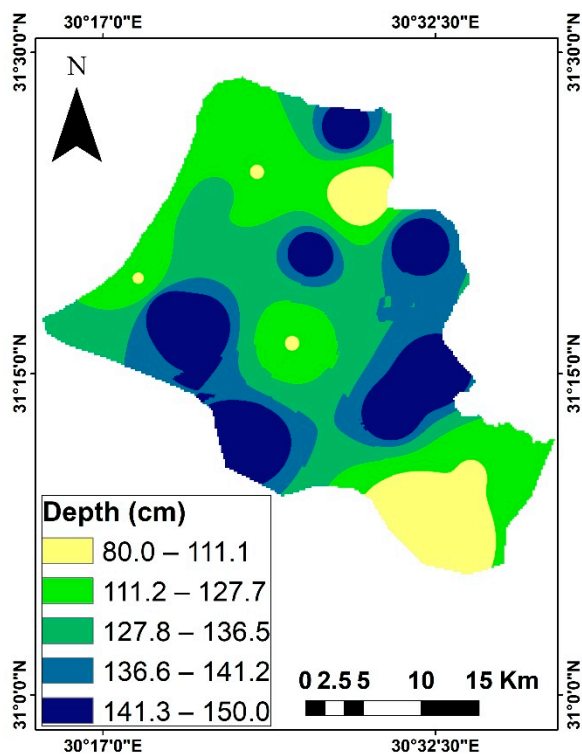
(b)



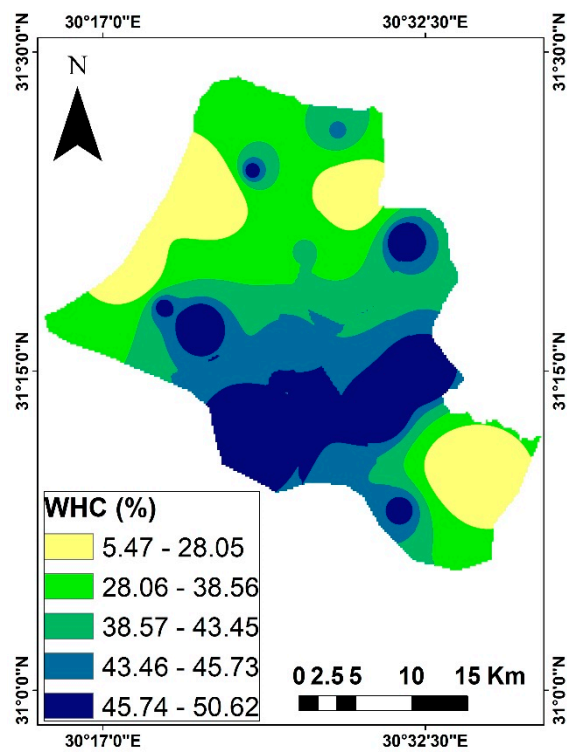
(c)



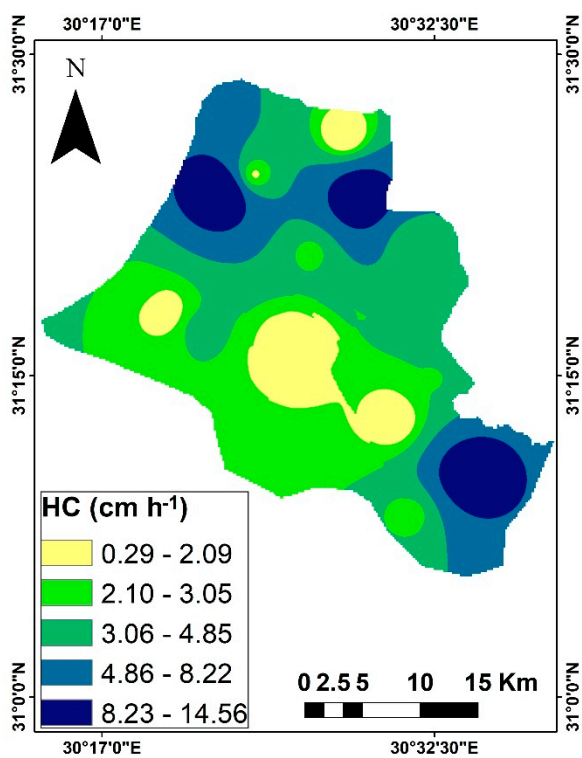
(d)



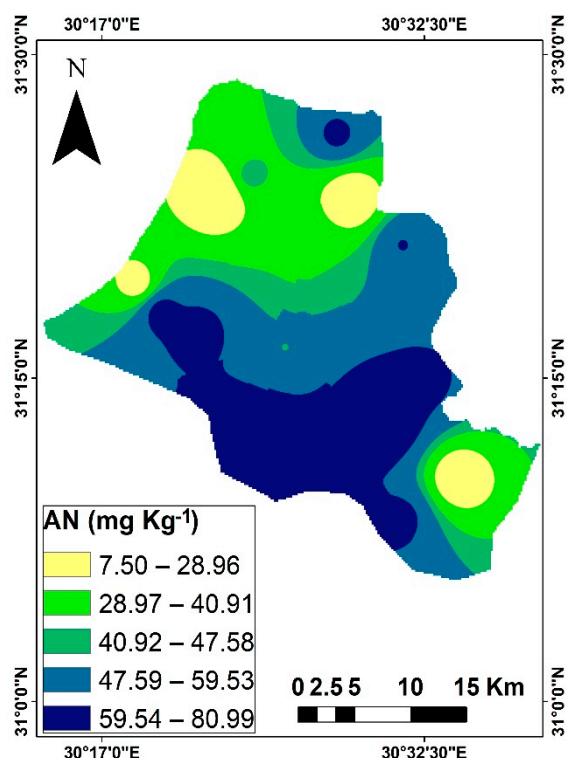
(e)



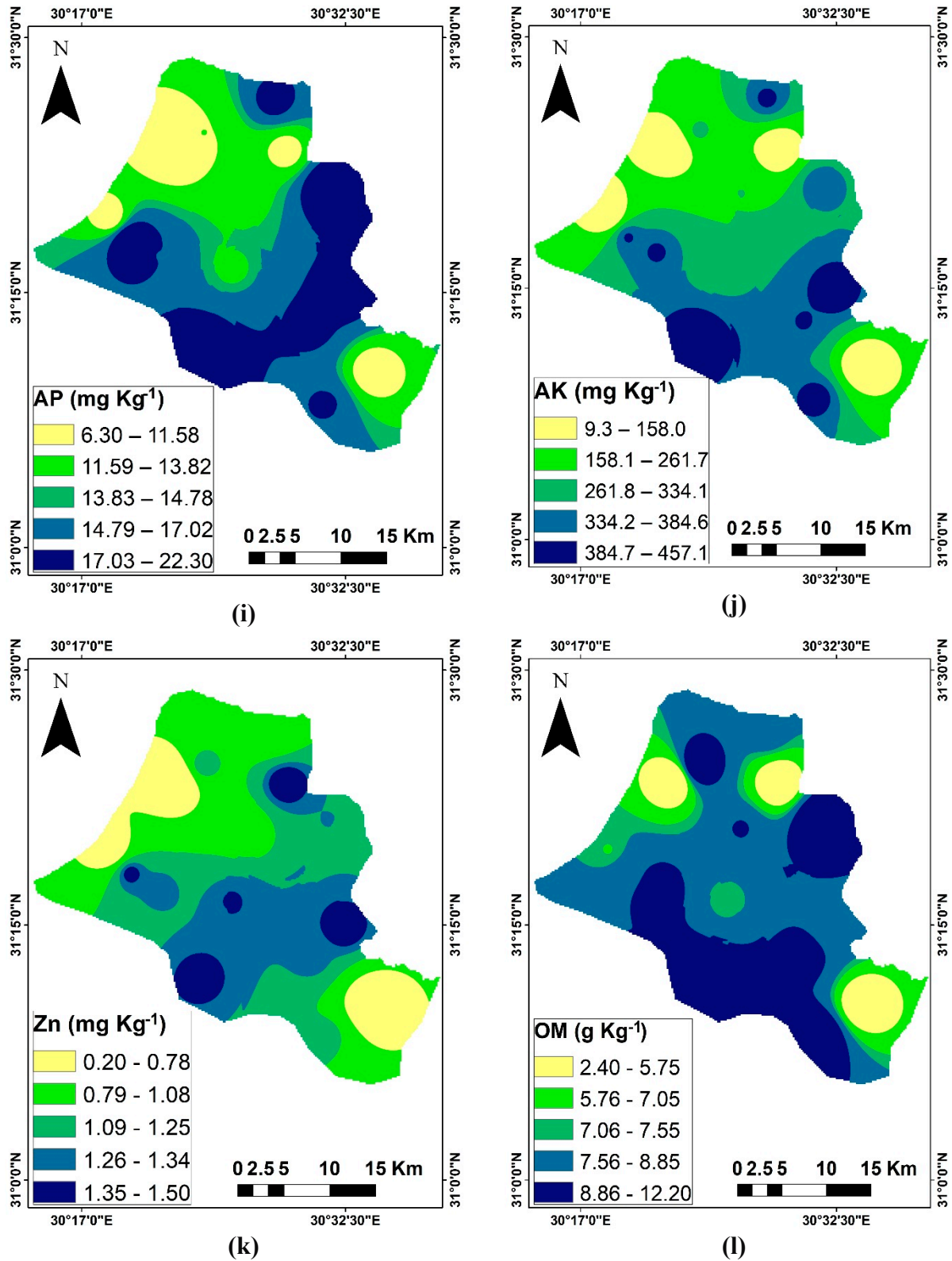
(f)



(g)



(h)



**Figure S1.** Spatial distribution of some chemical, physical and fertility soil properties (a) electric conductivity (EC: dS m<sup>-1</sup>), (b) soil reaction (pH), (c) exchangeable sodium percent (ESP: %), (d) calcium carbonate percentage (CaCO<sub>3</sub>: g Kg<sup>-1</sup>), (e) depth (cm), (f) water holding capacity (WHC: %), (g) hydraulic conductivity (HC: cm h<sup>-1</sup>), (h) available N (AN: mg Kg<sup>-1</sup>), (i) available P (AP: mg Kg<sup>-1</sup>), (j) available K (AK: mg Kg<sup>-1</sup>), (k) Zinc (Zn: mg Kg<sup>-1</sup>) and (l) organic matter (OM: g Kg<sup>-1</sup>)

**Table S1.** Factor score of soil suitability parameters for wheat crop in the study area.

Soil parameter	Unit	Factor Score			
		1.0	0.8	0.5	0.2
Chemical properties					
EC	dS m <sup>-1</sup>	< 4	4–8	8–16	> 16
pH	-	5.5–7	7–7.8	7.9–8.5	> 8.5
ESP	%	< 10	10–15	15–20	> 20
CaCO <sub>3</sub>	g Kg <sup>-1</sup>	< 50	50–100	100–150	> 150
Physical properties					
Drainage (R )	-	Well	Moderate	Poor	Very poor
Texture (T)	-	L, SCL, SL, LS, CL	SC, SiL, SiCL	Si, C, SiC	G, S
Depth (D)	cm	> 100	100–50	50–25	< 25
Topography (FF)	%	< 2	2–4	4–6	> 6
Surface stoniness (SS)	%	< 20	20–35	35–55	> 55
Hard pan (HP)	cm	> 100	100–50	50–20	< 20
Hydraulic conductivity (HC)	cm h <sup>-1</sup>	< 0.5	0.5–2	2–6.25	> 6.25
Water holding capacity (WHC)	%	> 50	50–20	20–15	< 15
Fertility properties					
SOM	g Kg <sup>-1</sup>	> 20	10–20	5–10	< 5
N	mg Kg <sup>-1</sup>	> 80	80–40	40–20	< 20
P	mg Kg <sup>-1</sup>	> 15	15–10	10–5	< 5
K	mg Kg <sup>-1</sup>	> 400	400–200	200–100	< 100
Zn	mg Kg <sup>-1</sup>	> 1	1–0.5	0.5–0.25	< 0.25

**Table S2.** CSI range of study area

Index	Values	Symbol	Classes
CSI	≥ 0.62	CSI 1	High chemical suitability
	0.50 – 0.61	CSI 2	Moderate chemical suitability
	0.39 – 0.49	CSI 3	Low chemical suitability
	≤ 0.38	CSI 4	Very Low chemical suitability

**Table S3.** PSI range of study area

Index	Values	Symbol	Classes
PSI	≥ 0.73	PSI 1	High physical suitability
	0.67 – 0.72	PSI 2	Moderate physical suitability
	0.61 – 0.66	PSI 3	Low physical suitability
	≤ 0.60	PSI 4	Very Low physical suitability

**Table S4.** FSI range of study area

Index	Values	Symbol	Classes
FSI	$\geq 0.61$	FSI 1	High fertility suitability
	0.43 – 0.60	FSI 2	Moderate fertility suitability
	0.25 – 0.42	FSI 3	Low fertility suitability
	$\leq 0.24$	FSI 4	Very Low fertility suitability

**Table S5.** FCSI range of study area

Index	Values	Symbol	Classes
FCSI	$\geq 0.67$	FCSI 1	High Suitable
	0.57 – 0.66	FCSI 2	Moderate Suitable
	0.47 – 0.56	FCSI 3	Low Suitable
	$\leq 0.46$	FCSI 4	Unsuitable