

Table 1: Salinity classes of irrigation water **Salinity**

ECiw (μScm^{-1})	Salinity class	Salinity hazard
100–250	SC1	Low
250–750	SC2	Medium
750–2250	SC3	High
> 2250	SC4	Very high

ECiw – Electricconductivity of water.

Table 2: Sodicity classes of irrigation water

SAR of water (mmoles l^{-1})	Sodicity class	Sodicity hazard
< 10	S1	Low
10–18	S2	Medium
18–26	S3	High
> 26	S4	Very high

Table 3: Residual sodium carbonate (RSC) and suitability of water for irrigation

RSC (meql^{-1})	Suitability of water for irrigation
< 1.25	Safe
1.25–2.50	Marginal
> 2.5	Unsuitable

Table 4: Textural classes of soil irrigated by Lake Abaya.

Sampling district	Depth/cm/	Altitude	longitude	latitude	Soil particle			Soil textural class
					%clay	%silt	%sand	
Wajifo	Profile 1							
	0-30	1176	037°46.129'	06°26.284'	25.6	61.2	13.2	silt loam (SiL)
	30-60	1176	037°46.129'	06°26.284'	29.6	51.2	19.2	silty clay loam (SiCL)
	Profile 2							
	0-30	1170	037°46.153'	06°26.314'	31.6	57.2	11.2	silty clay loam (SiCL)
	30-60	1170	037°46.153'	06°26.314'	31.6	61.2	7.2	silty clay loam (SiCL)
Yayike	Profile 1							
	0-30	1186	037°46.443'	06°23.754'	13.6	31.2	55.2	sandy loam (SL)
	30-60	1186	037°46.443'	06°23.754'	17.6	43.2	39.2	loam (L)
	Profile 2							
	0-30	1176	037°46.384'	06°23.831'	23.6	51.2	25.2	silt loam (SiL)
	30-60	1176	037°46.384'	06°23.831'	27.6	31.2	41.2	clay loam (CL)
Omo lante	Profile 1							
	0-30	1181	037°47.929'	06°17.087'	43.6	51.2	5.2	silty clay (SiC)
	30-60	1176	037°47.980'	06°17.010'	41.6	51.2	7.2	silty clay (SiC)
	Profile-2							
	0-30	1181	037°40.031'	06°09.702'	26.4	56.4	17.2	silt loam (SiL)
	30-60	1181	037°40.031'	06°09.81'	31.6	61.2	7.2	Slit clay loam(SCL)
Algae	Profile 1							
	0-30	1181	037°47.929'	06°17.087'	26.4	42.4	31.2	loam (L)
	30-60	1181	037°47.929'	06°17.087'	38.4	32.4	29.2	clay loam (CL)

	Profile 2		Table 4 (continued)					
	0-30	1176	037°47.980'	06°17.010'	16.4	42.4	41.2	loam (L)
	30-60	1176	037°47.980'	06°17.010'	34.4	38.4	27.2	clay loam (CL)
Fura	Profile 1							
	0-30	1180	037°42.168'	06°10.069'	44.4	46.4	9.2	silty clay (SiC)
	30-60	1180	037°42.168'	06°10.069'	34.4	54.4	11.2	silty clay loam (SiCL)
	Profile 2							
	0-30	1181	037°42.211'	06°10.054'	38.4	52.4	9.2	silty clay loam (SiCL)
	30-60	1181	037°42.211'	06°10.054'	28.4	46.4	25.2	clay loam (CL)

Table 5: Textural classes of soils irrigated by Sile River and Lake Chamo

Sampling district	Depth/cm/	Altitude	longitude	latitude	Soil particle			Soil textural class
					% clay	% silt	% sand	
Shele Mela	Profile 1							
	0-30	1112	0372°9.594'	055°1.292'	29.6	59.2	11.2	silty clay (SiC)
	30-60	1112	0372°9.594'	055°1.292'	35.6	49.2	15.2	silty clay (SiC)
Eligo	Profile 1							
	0-30	1102	037°27.329'	054°7.957'	43.6	35.2	21.2	clay (C) clay (C)
	30-60	1102	0372°7.329'	05°47.957'	51.6	37.2	11.2	
	Profile 2							
	0-30	1120	037°27.228'	05°50.404'	59.6	39.2	1.2	clay (C)
	30-60	1120	037°27.228'	055°0.404'	49.6	43.2	7.2	silty clay (SiC)

Table 6: Chemical composition of soils irrigated under Lake Abaya

Sampling site						Soluble cation and anion					Exchangeable cation			Soil classification
	Depth /cm/	pH	EC	ESP	CO ₃	meq/l(Ca +Mg)	meq/lNa	meq/l K	meq/l Cl	meq/l HCO ₃ ⁻	Ca+Mg (cmol(+)/Kg	Na cmol(+)/Kg	K cmol(+)/Kg	
A-1	0-30	7.4	0.388	8.9	Trace	0.65	6.739	5.384	0.2	0.8	10.4	1.304	2.949	Non salin non sodic
A-1	30-60	8.07	0.86	6.92	Trace	0.31	20.430	3.077	0.2	1	26.8	2.261	3.590	Non salin non sodic
A-2	0-30	7.24	19.22	15.31	Trace	27.71	53.470	9.360	28.5	0.6	62	11.74	2.949	Saline sodic
A-2	30-60	7.75	14.34	26.67	Trace	13.11	174.96	4.617	19.9	0.9	47.1	17.83	1.923	Saline sodic
F-1	0-30	7.78	0.611	13.64	Trace	0.57	16.732	3.207	0.4	2.2	25.9	4.870	4.930	Non saline non sodic
F-1	30-60	7.91	11.27	41.09	Trace	3.89	193.47	5.254	7.6	1	33.2	25.22	2.949	Non saline non sodic
F-2	0-30	7.93	1.206	11.32	Trace	1.1	23.691	5.000	1	0.7	25.9	3.913	4.743	Non saline non sodic
F-2	30-60	7.73	0.987	9.01	Trace	0.75	21.738	3.590	1.1	1.2	32.2	3.478	2.949	Saline sodic
OL-1	0-30	7.7	0.631	50.99	Trace	0.33	18.694	3.331	19.8	0.7	18.4	24.348	5.000	Non saline non sodic
OL-1	30-60	8.22	1.743	47.63	Trace	0.86	35.864	3.590	1.6	1.1	32	39.124	11.021	Non saline non sodic
W-1	0-30	7.8	0.58	30.5	Trace	1.36	11.518	11.408	0.3	1.1	31.5	26.093	27.953	Non saline non sodic
W-1	30-60	7.77	0.519	53.41	Trace	1.05	13.262	7.437	0.3	1	35.4	61.752	18.459	Non saline non sodic
W-2	0-30	7.97	0.859	29.92	Trace	1.08	18.476	8.464	0.6	1.3	43.4	26.951	19.741	Sodic
W-2	30-60	7.73	0.734	42.33	Trace	1.1	21.302	3.461	0.5	0.8	36.2	33.912	10.004	Sodic
Y-1	0-30	9.03	6.64	45.23	Trace	0.56	18.040	5.384	0.4	0.9	17.7	25.204	12.822	Sodic
Y-1	30-60	7.99	0.681	52.87	Trace	0.2	19.776	4.617	0.5	0.8	20.5	35.659	11.286	Sodic
Y-2	0-30	7.83	0.666	57.32	Trace	5.73	141.309	16.151	6	1	41	80.885	19.233	Sodic
Y-2	30-60	8.02	7.83	86.09	Trace	2.5	53.252	3.207	3	2.5	10.7	121.757	8.976	Sodic

Table 7: Chemical composition of soils irrigated by Lake Chamo

Sam pling site	Depth/c m/					Soluble cation and anion					Exchangeable cation			
		PH	Ec	CO ₃ ⁻	ESP	meq/l(Ca +Mg)	meq/l Na	meq/l K	meq/l Cl	meq/l HCO ₃ ⁻	Ca+Mg (cmol(+)/Kg	Na cmol(+)/K g	K cmol(+)/ Kg	SAS
SM1	0-30	7.54	23.6	Trace	35.76	17.87	298.89	7.561	30.1	0.5	51.2	30.000	2.692	Saline sodic
SM1	30-60	7.62	18.66	Trace	42.17	10.69	234.76	5.384	19.5	0.6	32.4	25.217	2.180	Saline sodic
E-1	0-30	7.84	0.644	Trace	61.68	1.64	14.779	4.357	0.7	0.8	34.5	69.571	8.722	sodic
E-1	30-60	7.91	2.48	Trace	43.89	1.62	40.424	2.308	1.5	1.3	34.2	34.770	10.258	sodic

Table 8: Characteristics of irrigation water from Sille river, lake Chamo and Abaya

Water source	pH	ECiw ($\mu\text{S}/\text{cm}$)	Soluble cations (meq/l)		SAR	Soluble anions (meq/l)			RSC
			Ca ²⁺ Mg ²⁺	Na ⁺		Cl ⁻	HCO ₃ ⁻	CO ₃ ²⁻	
Lake Abaya	8.073	1214.5	2.082	26.445	30.357	3.63	6.45	1.96	5.646
Lake Chamo	8.035	2179	3.995	33.04	29.05	6.05	9.6	4.2	9.80
Sile river	7.11	575	4.88	9.562	6.121	0.8	4.9	0.6	0.62

Table 9: Salinity, Sodicity and RSC hazard of irrigation water sources

Water source	Salinity (EC) hazard		Sodicity (SAR) hazard		Residual Na ₂ CO ₃ hazard
	Class	Hazard	Class	Hazard	Hazard
Lake Abaya	C3	High	S4	Very high	Unsuitable
Lake Chamo	C3	High	S4	Very high	Unsuitable
Sile river	C2	Medium	S1	Low	safe