

Appendix

(Appendix A) Chemical and physical properties of the pot experiment soil:-

EC Ds/m	pH paste	Soluble cations (meq/L)			Soluble Anions(meq/L)			SAR	
		Na	K	Ca + Mg	CO ₃	HCO ₃	Cl		
1.4	7.7	10.7	0.3	7.8	0.0	3.2	3.6	6	
Soil particles distribution			Textural Class	CEC Cmol/kg soil	Moisture content	Saturation			
Sand %	Silt %	Clay %							
11	43	55	Clay Loam	55	3	80			
Exchangeable Cations (meq/100g soil)				N%	O.C	P ppm	CaCo3 %		
Na		K	Ca+ Mg						
4.3		0.1	50.6	0.04	0.1	3.0	0.1		

(Appendix B) Chemical and physical properties of the field experiment soil in site

Depth Cm	C. Sand %	F.Sand %	Silt %	Clay %	Lab. Textur e	Ece Ds/ m	pH paste	pH 1:5	Exchangeable cations, cmol(+) kg ⁻¹				CEC Cmol(+) kg ⁻¹
									Ca+M g	K	Na	Sum	
0-30	4	9	55	32	ZCL	0.4	7.7	8.1	41.5	1.2	1.3	44.0	44
30-60	3	9	39	49	C	0.4	7.7	8.3	43.8	1.3	0.9	46.0	46

(1)

O.M %	O.C %	Total N %	C:N	CaCo 3 %	Olsen P ppm	ESP	SAR	Soluble cations (meq/l)				Soluble anions (meq/l)					Sp %
								Ca+ Mg	K	Na	Sum	CO ₃	HCO ₃	Cl	SO ₄	Sum	
1.6	0.9	0.14	6.4	4	4.1	3	3	1.8	0.1	2.5	4.4		3.0	0.3	1.1	4.4	64
1.2	0.7	0.09	7.8	5	3.3	2	1	2.5	0.1	1.5	4.1		3.1	0.4	0.6	4.1	76

Site (1) : Experimental Farm of College of Agricultural studies, Sudan University of Science and Technology, Shambat.

Depth	Total Sand	Silt	Clay	Lab.	Ece	pH	pH	Exchangeable cations, cmol(+)kg ⁻¹				CEC
Cm	%	%	%	Texture	Ds/m	paste	1:5	Ca+Mg	K	Na	Sum	Cmol(+)kg ⁻¹
0-15	18	17	65		0.89		7.9	48.5	0.3	2.8	8.8	54
15-30	15	15	70		0.84		8.0	47.7	0.2	3.9	8.7	58
30-60	21	16	63		0.75		8.0	37.7	0.2	3.5	8.9	53

(Appendix C) Chemical and physical properties of the field experiment soil in site (2)

O. M	OC	Total N	C: N	CaCO ₃	Olse n P	ESP	SAR	Soluble cations (meq/l)				Soluble anions (meq/l)					Sp
%	%	%		%	ppm			Ca+Mg	K	Na	Su m	CO ₃	HCO ₃	Cl	S o _i	S u m	%
	0.4	0.02		5	5	9	2	5.7	0.5	5							69
	0.4	0.02		6	5	17	3	4.6	0.3	10							73
	0.4	0.02		8	5	28	2	5.2	0.3	15							71

Site (2) : Experimental Farm of Faculty of Agricultural and Environmental Sciences, University of Gadarif, Tawawa.