CONTENT

			Page No	
Title page			i	
	Approval of the Viva-Voce Board			
	Certificate of the Supervisor (s)			
Declaration		- · · · · · · · · · · · · · · · · · · ·	v	
Curriculun	n vitae		vi	
Acknowled	lgeme	ents	vii	
Content	U		viii	
List of Tab	oles		Х	
List of Fig	ures		xi	
List of Abl	orevia	tions	xiv	
Abstract			xvi	
Chapter 1	Intro	oduction	1	
Chapter 2	Rev	iew of Literature	9	
	2.1	Soil C sequestration	12	
	2.2	Pools of soil C	14	
		2.2.1 Soil organic C	14	
		2.2.2 C pools related to soil micro-organisms	16	
		2.2.3 Soil inorganic C	18	
		2.2.4 Soil aggregate associated C	19	
	2.3	Spectroscopy application in soil C analysis	21	
	2.4	Factors influence soil C budget	22	
		2.4.1 Climate	22	
		2.4.2 Soil properties	23	
		2.4.3 Land use and management	24	
		2.4.4 Cropping system	25	
	2.5	Coastal saline soil and C dynamics	26	
Chapter 3		erials and Methods	31	
	3.1	Study area	33	
	3.2	Determination of climatic variables	34	
	3.3	Energy used and CO_2 equivalent for perturbation and cultivation	34	
	3.4	Soil sampling	35	
	3.5	Soil analysis	35	
		3.5.1 Determination of basic soil properties	36	
		3.5.2 Soil total C	37	
		3.5.3 Soil inorganic C (C _{inorg})	37	
		3.5.4 Soil total organic C (C_{tot}) and pools of organic C	37	
		3.5.5 Microbial biomass C (C _{mic})	39	
		3.5.6 Determination of soil respiration (CO_2 -C release) and potential mineralization C (C_{min})	39	

	3.5.7 Diffused Fourier transformed mid-infrared	40
	spectroscopy (DRIFTS) Analysis	
	3.5.8 Aggregate Analysis and Structural Indices	40
	3.5.9 Aggregate Associated C	42
Chapter 4	Results and Discussion	45
	4.1 Soil analysis and climate variability	47
	4.1.1 Soil, climate and cropping systems	47
	4.1.2 Salinity distribution in soils of studied coastal agro-ecosystems	51
	4.2 Dynamics of soil C pools in relation to salinity in soils of coastal agro-ecosystem	54
	4.3 Effect of salinity on soil micro-organisms and their relationship with soil organic C	67
	4.4 Chemical nature of organic C in soils along salinity gradient	73
	4.5 Impact of soil salinity on soil aggregation and aggregate associated C	78
Chapter 5	Summary and Conclusions	87
References	s	95
Annexure		117