

Supplementary Information (SI) For Sustainability

Influence of Organic Amendments on Soil Carbon Sequestration Potential of Paddy Soils under Two Irrigation Regimes

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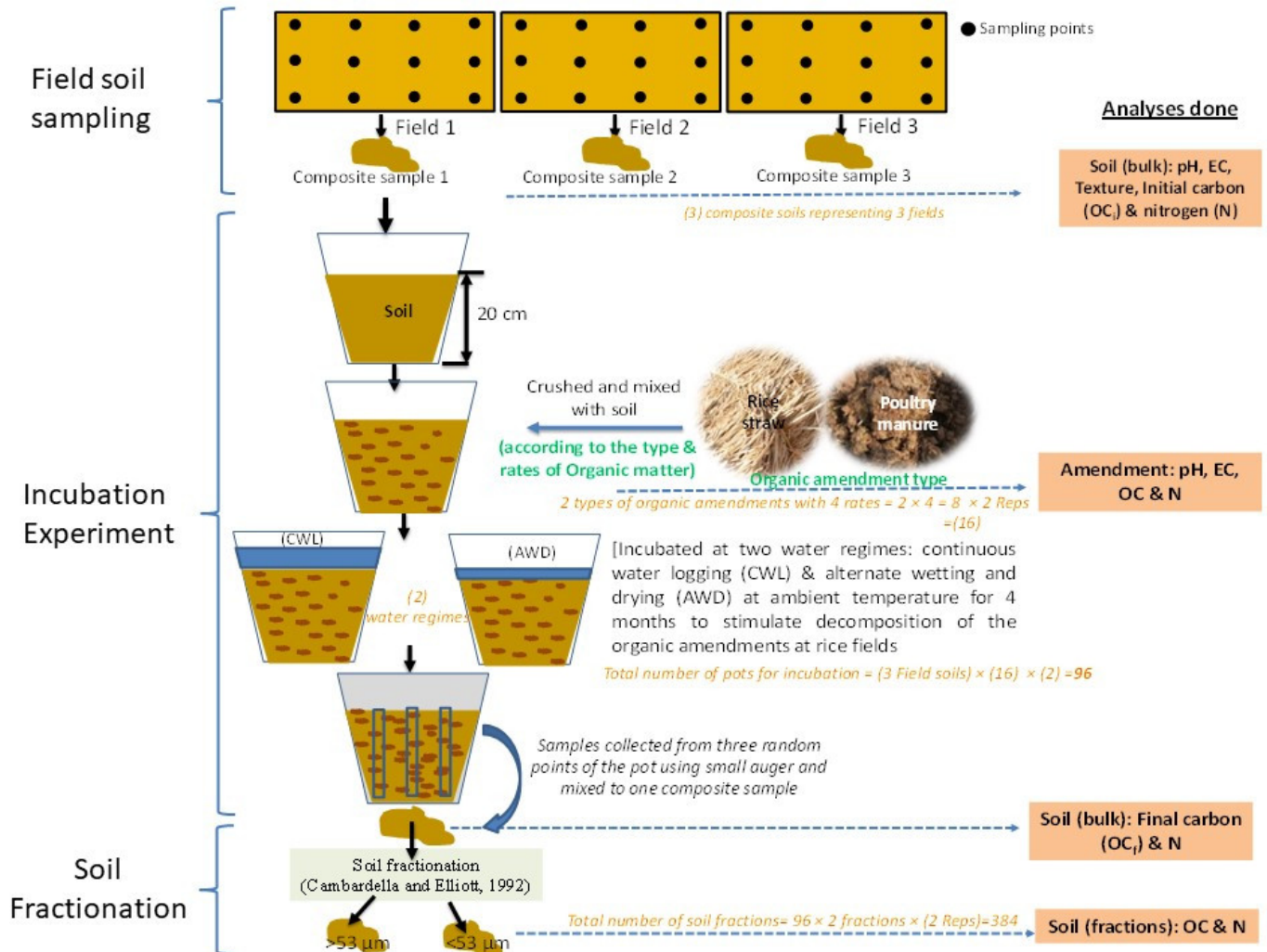


Figure S1. Graphical details of all experimental steps.

Table S1. Effect of irrigation regime and organic amendment on soil organic carbon, total nitrogen, C:N ratio and carbon sequestration.

Treatment	Organic carbon (%)	Total nitrogen	C: N ratio	C sequestration potential (%)
Irrigation regime				
Continuous water logging	1.23 ^a	0.116	10.55	47.4 ^a
Alternate wetting and drying	1.13 ^b	0.108	10.45	35.2 ^b
Level of significance	**	NS	NS	**
CV (%)	6.21	8.01	4.84	3.15
Organic amendment				
Poultry manure	1.25 ^a	0.123 ^a	10.16 ^b	45 ^a
Rice straw	1.13 ^b	0.105 ^b	10.77 ^a	37 ^b
Level of significance	**	**	*	**
CV (%)	6.20	3.94	3.95	4.28

CV = coefficient of variation. In the columns, means followed by different letters are significantly different. *means at 5% level of probability, **means at 1% level of probability, NS means not significant.

Table S2. Interaction effect of irrigation regime and organic amendment on soil organic carbon, total nitrogen, C:N ratio and carbon sequestration.

Interaction	Organic carbon (%)	Total nitrogen (%)	C: N ratio	Carbon sequestration (%)
CWL×PM	1.305 ^a	0.1233 ^a	10.49 ^{ab}	55.1 ^a
CWL×RS	1.158 ^{bc}	0.1033 ^b	11.10 ^a	43.0 ^b
AWD×PM	1.195 ^b	0.1217 ^a	9.84 ^b	42.9 ^b
AWD×RS	1.098 ^c	0.1050 ^b	10.44 ^{ab}	31.1 ^c
Level of significance	*	*	*	**
CV (%)	4.46	5.66	5.69	6.87
SE (±)	0.030	0.007	0.730	0.34

Irrigation regime: CWL = continuous waterlogging, AWD = alternate wetting and drying, organic amendment: PM = poultry manure, RS = rice straw, CV = coefficient of variation, SE= standard error. In the columns, means followed by different letters are significantly different. *means at 5% level of probability and **means at 1% level of probability.

Table S3. Effect of organic amendment rate of a specific amendment type on soil organic carbon, total nitrogen, C:N ratio and carbon sequestration under particular irrigation regime.

Organic amendment	Amendment rate (g kg ⁻¹ soil)	Organic carbon (%)	Total nitrogen (%)	C: N ratio	Carbon sequestration (%)
<i>Continuous water logging</i>					
Poultry manure	0	1.18 ^b	0.121 ^{ab}	9.82 ^c	42.00 ^c
	2.5	1.24 ^b	0.124 ^{ab}	10.10 ^b	49.09 ^b
	5.0	1.39 ^a	0.131 ^a	10.71 ^a	67.73 ^a
	15.0	1.27 ^b	0.120 ^{ab}	10.64 ^a	48.49 ^b
	Level of significance	*	***	*	*
	CV (%)	6.23	4.28	5.80	4.96
	SE (±)	0.06	0.25	0.36	1.76
<i>Alternate wetting and drying</i>					
Rice straw	0	1.18 ^b	0.121 ^a	9.82 ^c	42.00 ^a
	2.5	1.19 ^b	0.104 ^{ab}	11.56 ^a	45.48 ^a
	5.0	1.23 ^a	0.110 ^{ab}	11.25 ^{ab}	47.47 ^a
	15.0	1.04 ^c	0.100 ^b	10.48 ^b	36.04 ^b
	Level of significance	**	*	*	*
	CV (%)	4.61	6.63	2.20	6.90
	SE (±)	0.03	0.07	1.04	1.35
<i>Alternate wetting and drying</i>					
Poultry manure	0	1.05 ^b	0.093 ^b	11.38 ^a	25.00 ^c
	2.5	1.12 ^b	0.111 ^{ab}	10.27 ^a	34.66 ^b
	5.0	1.33 ^a	0.130 ^a	10.25 ^{ab}	58.71 ^a
	15.0	1.13 ^b	0.125 ^{ab}	9.01 ^b	35.27 ^b
	Level of significance	*	**	*	***
	CV (%)	5.45	4.43	6.79	5.68
	SE (±)	0.07	0.02	1.87	2.13
<i>Alternate wetting and drying</i>					
Rice straw	0	1.05 ^b	0.093 ^c	11.38 ^a	25.00 ^b
	2.5	1.13 ^a	0.105 ^{ab}	10.79 ^a	34.66 ^a
	5.0	1.12 ^a	0.110 ^a	9.99 ^b	32.86 ^a
	15.0	1.05 ^b	0.100 ^{ab}	10.52 ^{ab}	25.64 ^b
	Level of significance	*	*	**	**
	CV (%)	6.64	8.29	7.67	4.60
	SE (±)	0.03	0.04	1.44	1.13

CV = coefficient of variation, SE= standard error. In the columns, means followed by different letters are significantly different. *means at 5% level of probability, **means at 1% level of probability and ***means at 0.1% level of probability.

Table S4. Effect of irrigation regime on organic carbon, total nitrogen and C:N ratio of two soil fractions (<53 and >53 μm).

Irrigation regime	Organic carbon (%)	Total nitrogen (%)	C: N ratio
<u><53 μm</u>			
Continuous water logging	1.41 ^a	0.13 ^a	11.24
Alternate wetting and drying	1.09 ^b	0.09 ^b	11.64
Level of significance	***	***	NS
CV (%)	8.96	7.70	23.37
<u>>53 μm</u>			
Continuous water logging	1.11	0.10	11.51 ^a
Alternate wetting and drying	1.16	0.11	10.48 ^b
Level of significance	NS	NS	*
CV (%)	20.20	17.59	19.56

In the columns, means followed by different letters are significantly different. CV = coefficient of variation, * = significant at 5% level of probability, *** = significant at 0.1% level of probability, NS = not significant.

Table S5. Effect of organic amendment type on organic carbon, total nitrogen and C:N ratio of soil fractions (<53 and >53 μm) irrespective to irrigation regimes.

Organic matter type	Organic carbon (%)	Total Nitrogen (%)	C:N ratio
<u><53 μm</u>			
Poultry manure	1.35	0.127	11.18
Rice straw	1.26	0.122	10.35
Level of significance	NS	NS	NS
CV (%)	22.67	25.11	23.21
<u>>53 μm</u>			
Poultry manure	1.15	0.11	10.62
Rice straw	1.07	0.10	10.37
Level of significance	NS	NS	NS
CV (%)	19.88	17.62	20.76

In the columns, means followed by different letters are significantly different. CV = coefficient of variation, NS = not significant.