Supplementary Materials

Effect of drainage practice on the emission of two carbon-based greenhouse gases (CO_2 and CH_4) from paddy system in South Korea: field pilot study

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Table S1. Method and timing of farming practices in the experiment field under continuous flooding and intermittent drainage.

Irrigation Methods / Farming Practices	Continuous Flooding	Intermittent Drainage
Fertilizer Application	70 kg N ha^{-1} at May 12th	
Irrigation Period	May 12th to August 10th	
Rice Transplanting	Thirty-day old seedlings (3–4 plants per hill) of rice (*Oryza sativa L.*, Japonica) were transplanted with spacing of 25 cm × 25 cm by hand.	
Cultivation Period	May 16th (transplant) to Sep. 17th (harvest)	
Flooding and Drainage	Paddy pot was flooded with 1–2 cm water until the rice plant attains the three-leaf stage (May 30th); and then, the pot was continuously flooded with 5–7 cm water depth; the pot was permanently drained 38 days prior to harvest.	Paddy pot was flooded with 1–2 cm water until the rice plant attains the three-leaf stage (May 30th); and then, the pot was flooded with 5–7 cm water depth and drained after 11 days. The practice was repeated three times. The pot was permanently drained 38 days prior to harvest.

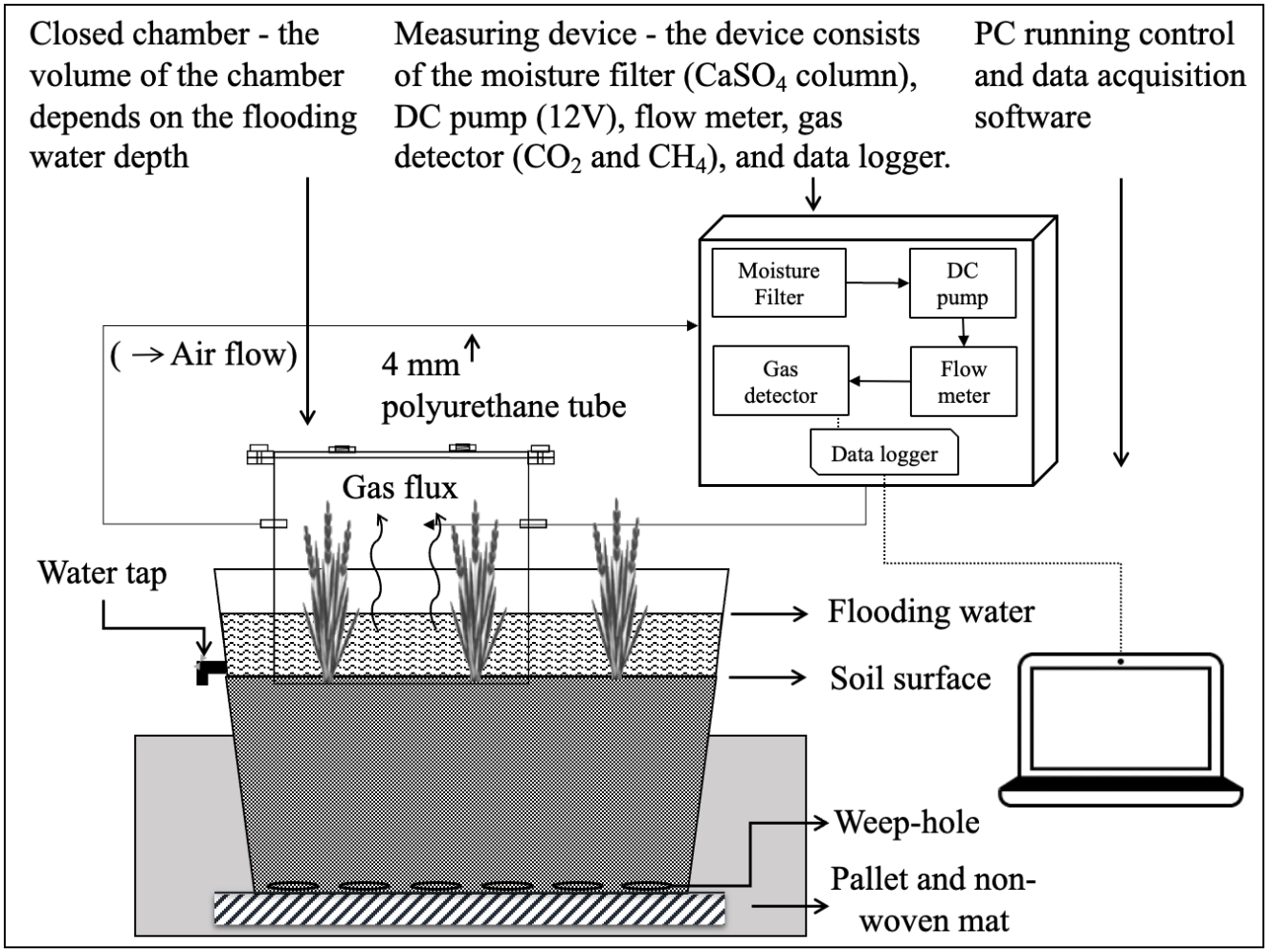
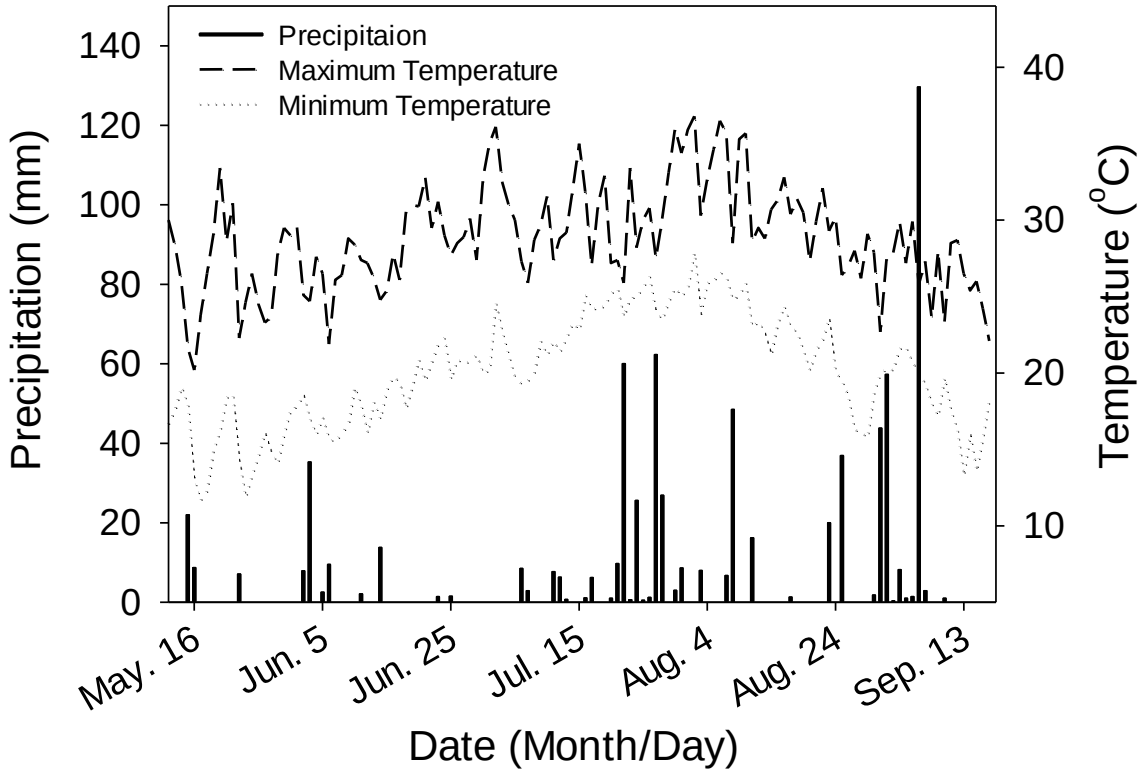

Closed chamber - the volume of the chamber depends on the flooding water depth
Measuring device - the device consists of the moisture filter ($CaSO_4$ column), DC pump (12V), flow meter, gas detector (CO_2 and CH_4), and data logger.
PC running control and data acquisition software
Moisture Filter
DC pump
Gas detector
Flow meter
Data logger
(→ Air flow)
4 mm
polyurethane tube
Gas flux
Water tap
Flooding water
Soil surface
Weep-hole
Pallet and non-woven mat

Figure S1.



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28 **Figure S2.**

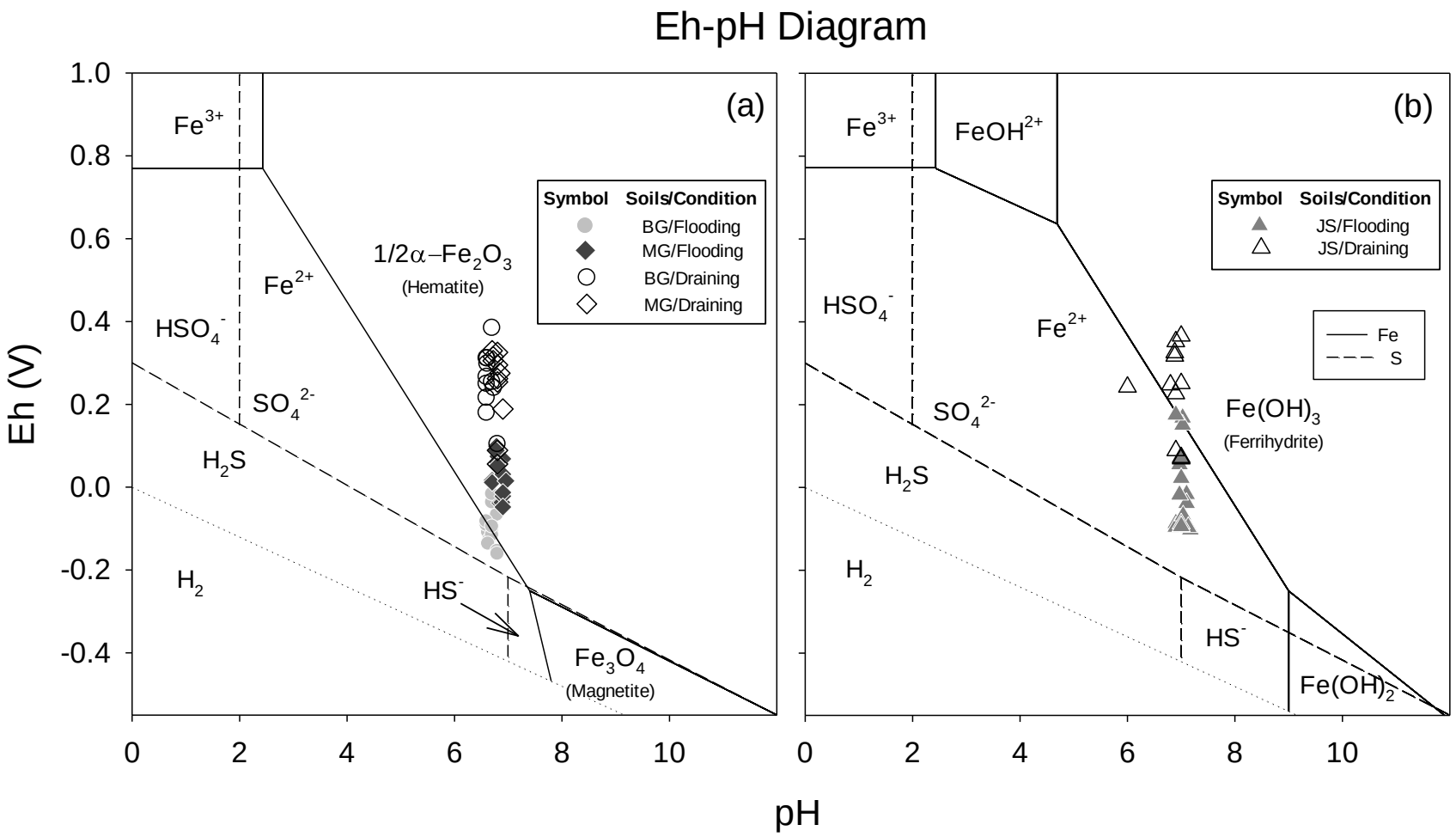
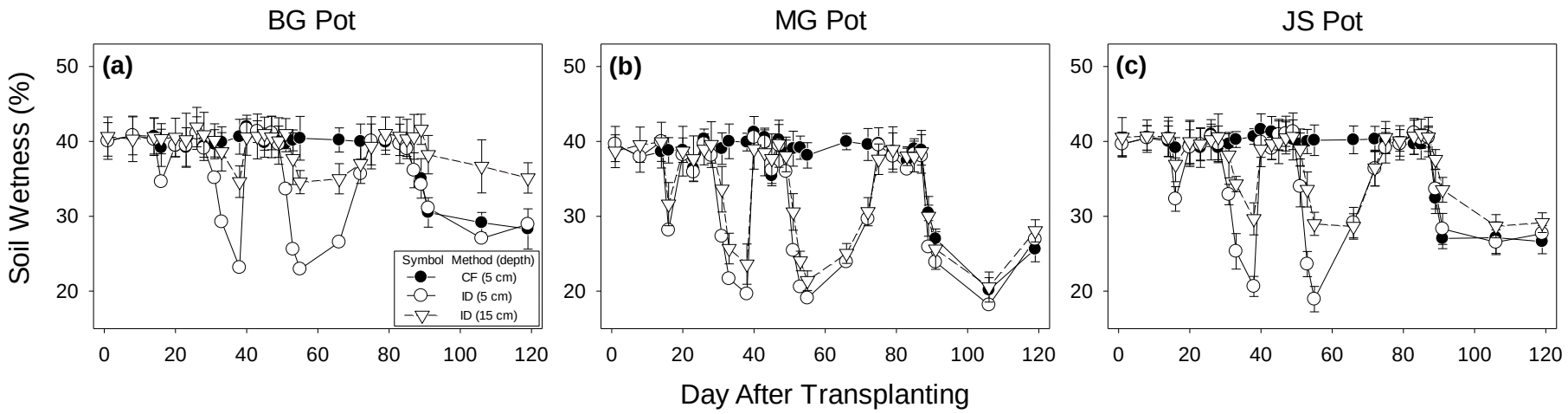

Eh-pH Diagram
(a)
(b)
Eh (V)
pH
Fe3+
Fe2+
FeOH2+
HSO4-
SO4 2-
H2S
H2
HS-
1/2α–Fe2O3
(Hematite)
Fe3O4
(Magnetite)
Fe(OH)3
(Ferrihydrite)
Fe(OH)2
Symbol
Soils/Condition
BG/Flooding
MG/Flooding
BG/Draining
MG/Draining
JS/Flooding
JS/Draining
Fe
S

Figure S3



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33 **Figure S4**