**Online supplementary material**

**Supplementary Table S1.** Characteristics of experimental sites in dry-season rice areas in Cambodia.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Province | Year of experiment | Location | Soil groupb | Soil layer | pH  (H2O) | Total C (g kg−1) | Total N (g kg−1) | Avail. Pc  (g Mg−1) | Avail. K (cmolc kg−1) | CEC  (cmolc kg−1) | Clay  (%) | Sand  (%) |
| Battambang | 2016, 2017 | 13°5′10″N, 102°59′34″E | Toul Samroung | 0–20 cm | 5.8 | 5.6 | 0.4 | 4.7 | 0.14 | 25.9 | 53 | 10 |
| 20–40 cm | 5.2 | 4.5 | 0.4 | 6.0 | 0.11 | 28.7 | 55 | 9 |
| Kampong Thom | 2016, 2017 | 12°41′8″N, 104°53′49″E | Toul Samroung | 0–20 cm | 4.9 | 11.5 | 1.1 | 8.3 | 0.22 | 12.3 | 37 | 17 |
| 20–40 cm | 5.1 | 7.3 | 0.7 | 27.0 | 0.14 | 12.9 | 36 | 19 |
| Kampong Thom | 2016 | 12°42′0″N, 104°50′00″E | Krakor | 0–20 cm | 5.3 | 10.8 | 1.0 | 6.8 | 0.11 | 10.4 | 29 | 35 |
| 20–40 cm | 5.6 | 4.0 | 0.4 | 4.9 | 0.12 | 10.8 | 27 | 30 |
| Pursat | 2016 | 12°28′25″N, 103°52′51″E | Bakan | 0–20 cm | 5.0 | 7.2 | 0.8 | 4.4 | 0.10 | 5.6 | 22 | 28 |
| 20–40 cm | 5.4 | 4.6 | 0.6 | 3.7 | 0.11 | 9.1 | 38 | 22 |
| Pursat | 2016 | 12°17′45″N, 104°10′41″E | Prateah Lang | 0–20 cm | 5.9 | 9.6 | 0.7 | 4.6 | 0.11 | 0.9 | 4 | 86 |
| 20–40 cm | 7.9 | 1.2 | 0.2 | 3.6 | 0.08 | 3.9 | 20 | 35 |
| Pursat | 2017 | 12°35′10″N, 103°56′57″E | Bakan | 0–20 cm | 6.1 | 3.2 | 0.3 | 6.2 | 0.07 | 6.1 | –d | –d |
| 20–40 cm | 4.9 | 8.6 | 0.8 | 13.0 | 0.11 | 10.3 | –d | –d |
| Siem Reap | 2017 | 13°17′58″N, 103°52′34″E | Prateah Lang | 0–20 cm | 4.8 | 6.3 | 0.6 | 15.0 | 0.06 | 1.8 | 6 | 77 |
| 20–40 cm | 4.7 | 2.1 | 0.2 | 2.7 | 0.02 | 2.1 | 12 | 68 |

a: Soil group classification according to White et al. (2000). b: Total rainfall during the dry season (from December to April) in the province. c: Bray-2 method. d: Not measured.

**Online supplementary material**



**Supplementary Figure S1.**

Relationships between (a) the total C and total N contents, (b) between the sand and clay contents, (c) between the sand content and cation-exchange capacity (CEC), and (d) between the sand content and available K for the soils at the experimental sites in Cambodia.