**Running title:** Upland rice yield, row spacing and water stress

**Manuscript category:** Crop Science

**Supplementary material**

**Responses of upland rice cultivars to row spacing and water stress across multiple environments in Brazil**

Alexandre Bryan Heinemann\*1, Julian Ramirez-Villegas2, 3, 4, Adriano Stephan Nascente¹, Walmes Marques Zeviani5, Luís Fernando Stone1, Paulo Cesar Sentelhas6

1 Embrapa Arroz e Feijão (CNPAF), Rodovia GO-462, km 12 Zona Rural, CP. 179, 75375-000, Santo Antônio de Goiás, GO, Brasil.

2 School of Earth and Environment, University of Leeds, Leeds, LS2 9JT, UK

3 CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), km 17 recta Cali-Palmira, Cali, Colombia

4 International Center for Tropical Agriculture (CIAT), km 17 recta Cali-Palmira, Cali, Colombia

5 Laboratório de Estatística e Geoinformática (LEG), Departamento de Estatística, Universidade Federal do Paraná, Edifício da Administração - 3º andar - Centro Politécnico, CP. 19.081, 81.531-990, Curitiba, PR, Brasil.

6 Departamento de Engenharia de Biossistemas, ESALQ, Universidade de São Paulo, Av. Pádua Dias, 11, Bairro Agronomia, CP. 9, 13418-900, Piracicaba, SP, Brasil.

\*Corresponding author <alexandre.heinemann@embrapa.br>

Table S1. Soil fertility and texture for the experimental sites at Santo Antônio de Goiás (SAG), and Porangatu, state of Goiás, and Formoso do Araguaia, state of Tocantins, Brazil.

|  |  |  |
| --- | --- | --- |
| **Soil property** | **Units** | **Site** |
| **SAG** | **Porangatu** | **Formoso** |
| *Soil fertility* |
| pH | N/A | 5.8 | 6.4 | 5 |
| Ca | mmolc dm-3 | 15 | 10 | 26 |
| Mg | mmolc dm-3 | 5 | 0.8 | 6.8 |
| Al | mmolc dm-3 | 1 | 0.9 | 3.8 |
| H + Al | mmolc dm-3 | 46 | 25 | 70 |
| P | mg dm-3 | 5.5 | 9.3 | 14.3 |
| K | mg dm-3 | 140 | 156 | 218 |
| Cu | mg dm-3 | 3.5 | 2.6 | 1.1 |
| Zn | mg dm-3 | 3.7 | 6 | 1.9 |
| Fe | mg dm-3 | 50 | 66 | 102 |
| Mn | mg dm-3 | 56 | 19 | 92 |
| SOC1 | g dm-3 | 20 | 13 | 18 |
| Clay | % | 59 | 42 | 37 |
| Silt | % | 7 | 9 | 15 |
| Sand | % | 34 | 49 | 48 |
| FC2 (6 kPa) | mm | 160 | 150 | 121 |
| PWP3 (1500 kPa) | mm | 126 | 119 | 91 |
| ASW4 | mm | 34 | 31 | 30 |

1SOC: soil organic carbon; 2FC: field capacity (0 – 40 cm soil deep); 3PWP: permanent wilting point (0 – 40 cm soil deep); 4SWHC: soil water holding capacity (0 – 40 cm soil deep).



Figure S1. Location of the experimental sites in the states of Goiás and Tocantins, Brazil, and potential crop area for upland rice (UR) rotation.



Figure S2. Maximum (*Tmax*) and minimum (*Tmin*) air temperatures during the experiments in Santo Antônio de Goiás (SAG–2010 and SAG–2009) and Porangatu, state of Goiás, and Formoso do Araguaia, state of Tocantins, Brazil.