**Appendix S1. Definition of parameters in S1 Table.**

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| DVRJ  |  | Development rate in juvenile phase (oC.d-1) |
| DVRP  |  | Development rate in panicle development phase (oC.d-1) |
| DVRR  |  | Development rate in reproductive phase (oC.d-1) |
| RGRLMX  |  | Maximum relative growth rate of leaf area (oC.d-1) |
| RGRLMN  |  | Minimum relative growth rate of leaf area (oC.d-1) |
| SHADET  |  | Tolerance index to shading (unitless) |
| FSWTD  |  | The upper ratio of remaining available water to total water supply capability while transpiration declines (unitless) |
| SLA1 to 7 |  | Specific leaf area at different development stages (ha leaf kg-1 leaf biomass) |
| KDF1 to 4 |  | Light extinction coefficient of rice canopy at different development stages (unitless) |
| FST1 to 6 |  | Fraction of shoot dry matter allocated to stems at different development stages (unitless) |
| FSO1 to 3 |  | Fraction of shoot dry matter allocated to storage organs at different development reproductive stages (unitless) |
| FLV1 to 6 |  | Fraction of shoot dry matter allocated to leaves at different development stages (unitless) |
| FSH1, 2 |  | Fraction of shoot dry matter allocated to shoots at different vegetative stages (unitless) |
| EFF1 to 4 |  | Initial light use efficiency at air temperature 10, 25, 40 and 60 oC (unitless) |
| DRLV1 to 4 |  | Leaf death coefficient at different reproductive stages (unitless) |