|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *F0* | *Fm* | *Fv/Fm* | *Fm'* | *Y (II)* | *ETR* | *Fo'* | *Fv'/Fm'* | *qP* | *qN* | *qL* | *NPQ* | *Y (NO)* | *Y (NPQ)* |
| F0 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fm | 0.869 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| Fv/Fm | 0.733 | 0.742 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| Fm' | 0.886 | 0.928 | 0.501 | 1 |  |  |  |  |  |  |  |  |  |  |
| Y (II) | 0.692 | 0.917 | 0.858 | 0.704 | 1 |  |  |  |  |  |  |  |  |  |
| ETR | 0.584 | 0.232 | -0.068 | 0.537 | -0.149 | 1 |  |  |  |  |  |  |  |  |
| Fo' | 0.957 | 0.762 | 0.510 | 0.887 | 0.487 | 0.786 | 1 |  |  |  |  |  |  |  |
| Fv'/Fm' | 0.883 | 0.999 | 0.749 | 0.931 | 0.912 | 0.252 | 0.778 | 1 |  |  |  |  |  |  |
| qP | -0.536 | -0.750 | -0.115 | -0.866 | -0.532 | -0.355 | -0.586 | -0.741 | 1 |  |  |  |  |  |
| qN | -0.235 | -0.081 | 0.486 | -0.443 | 0.311 | -0.829 | -0.496 | -0.087 | 0.562 | 1 |  |  |  |  |
| qL | -0.723 | -0.947 | -0.506 | -0.929 | -0.83 | -0.207 | -0.662 | -0.940 | 0.911 | 0.240 | 1 |  |  |  |
| NPQ | -0.429 | -0.235 | 0.298 | -0.579 | 0.169 | -0.912 | -0.666 | -0.245 | 0.600 | 0.977 | 0.342 | 1 |  |  |
| Y (NO) | 0.161 | -0.296 | -0.348 | 0.0075 | -0.599 | 0.845 | 0.390 | -0.27 | 0.153 | -0.669 | 0.346 | -0.690 | 1 |  |
| Y (NPQ) | -0.356 | -0.204 | 0.371 | -0.552 | 0.194 | -0.862 | -0.600 | -0.211 | 0.629 | 0.991 | 0.344 | 0.993 | -0.643 | 1 |

**Chlorophyll fluorescence assay**

**Table S1**: Chlorophyll fluorescence studies in both rice varieties under pH stress for 48 hr. For control populations and treated populations, *n* = 6 for each

genotypes. Data shown are representative of two separate experiments. (\*) represent Correlation is significant (p<0.05) level.

F0- Minimal fluorescence from dark-adapted condition

Fm- Maximal fluorescence from dark -adapted condition

Fv/Fm- The maximum quantum efficiency of photosystem II/ Maximum quantum yield of PS II

Fm’- Maximal fluorescence from light-adapted condition

Y(II)- Quantum yield of PS II

ETR- Electron transport rate derived from Y (II) and PAR

F0’- Minimal fluorescence from light-adapted condition

Fv’/Fm’- The estimate of the maximum efficiency of PSII

qP- The proportion of open PS II / photochemical fluorescence quenching coefficient

qN- Coefficient Non photochemical quenching

qL- Fraction of PS II center that are open/ coefficient of photochemical fluorescence quenching assuming interconnected PS II antennae.

NPQ- Non Photochemical fluorescence quenching

Y(NO)- non-regulated energy dissipation (quantum yield of non-light induced non photochemical fluorescence quenching)

Y(NPQ)- Quantum yield of non-photochemical fluorescence quenching due to down regulation of light harvesting function. (Quantum yield of light induced non-

photochemical fluorescence quenching.